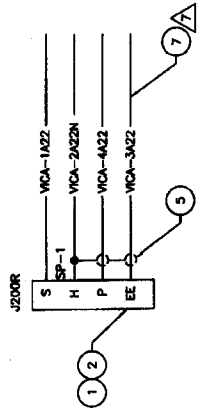


# NOTES:

- INTERPRET DRAWING PER ASME Y14.100.
- ITEM IDENTIFICATION PER MIL-STD-130
- FABRICATE AND INSPECT PER SAE-ASS0681
- REFERENCE LEX-11610 FOR SCHEMATIC
- BAG AND TAG REMAINING PART(S) WITH ASSOCIATED HARNESS ASSEMBLIES
- STAMP CABLE MARKERS AS SHOWN
- COVER WIRING WITH Braid SLEEVING FROM J200R BACK 36 INCHES.

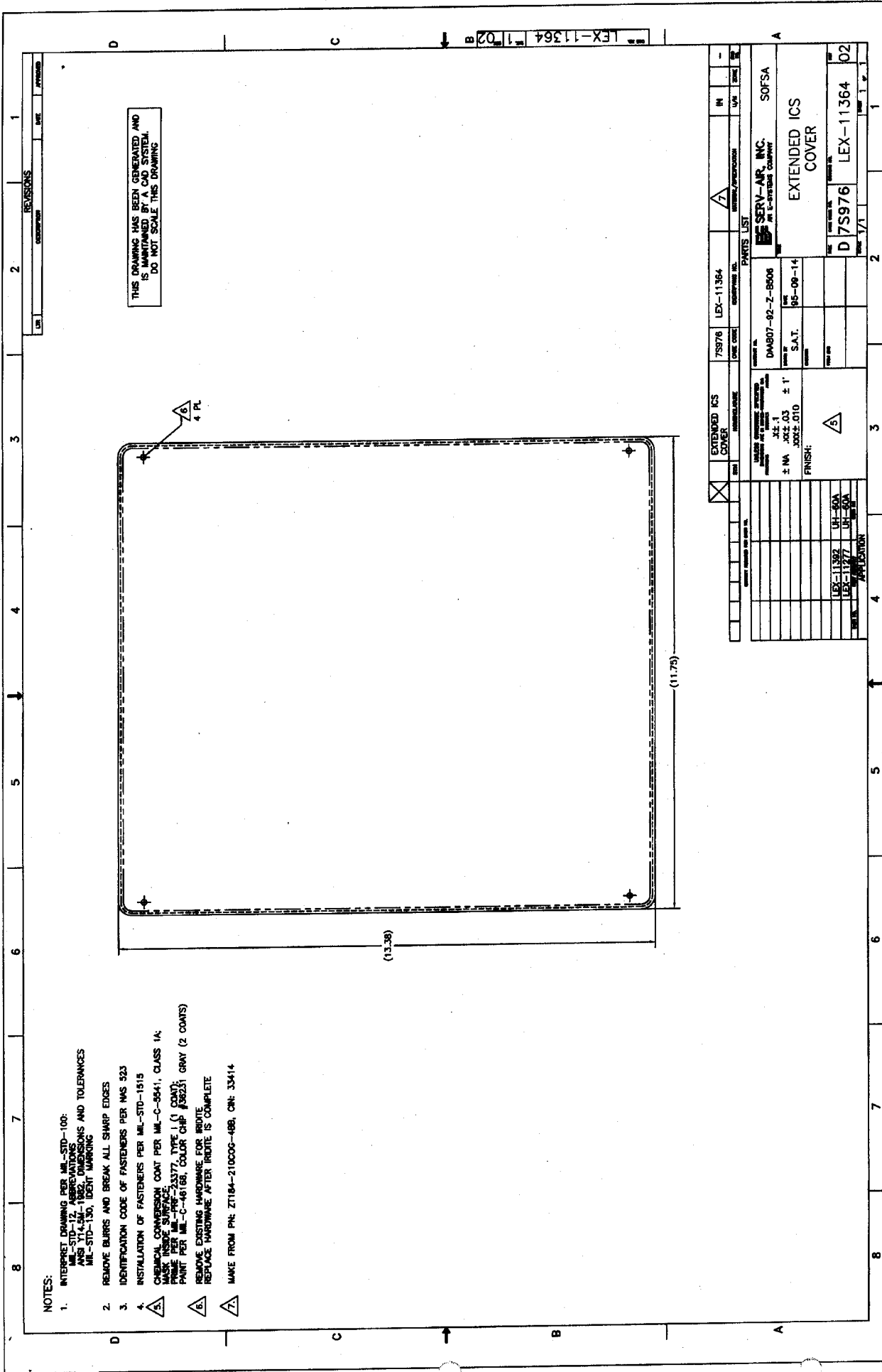


WIRE NUMBER	PWD	LENGTH
VCA-1A22	3	40
VCA-2A22N	3.6	40
VCA-3A22	4.5	40
VCA-4A22	4.5	40

QTY	DESCRIPTION	QTY	DESCRIPTION	QTY	DESCRIPTION
1	CABLE MARKER	06090	CM-SCE-1/2-4H-9	EA	B
36	SLEEVING	06383	SE25FR-MRO	IN	7
1	SPLICE	81349	M81824/1-2	EA	6
4	SHIELD TERMINATOR	81349	M83019/2-7	EA	5
80	CABLE SHIELD	81349	M27500-225P1523	IN	4
80	WIRE 22AWG	81349	M22759/43-22-9	IN	3
50	PINS	81312	100-2020P	EA	2
1	CONNECTOR	81312	MMC42PITCH	EA	1
1	HARNESS J200R	75976	LEX-11612	EA	1

SERV-AR, INC. AN E-STEEL COMPANY		SOFSA	
VIP INTERCOM ASSEMBLY II		HARNESS J200R	
D7S976		LEX-11612 06	
DATE: 05-10-08		REV: 05-10-08	
SHEET: 010		SHEET: 010	
FINISH:		FINISH:	
LEX-11610		LEX-11610	
APPLICATION:		APPLICATION:	

THIS DRAWING HAS BEEN GENERATED AND  
IS UNCLASSIFIED AND NOT FOR SYSTEM.  
DO NOT SCALE THIS DRAWING.



NOTES:

1. INTERPRET DRAWING PER MIL-STD-100:  
MIL-STD-12, ABBREVIATIONS  
ANSI Y14.5M-1982, DIMENSIONS AND TOLERANCES  
MIL-STD-130, IDENT MARKING
2. REMOVE BURRS AND BREAK ALL SHARP EDGES
3. REMOVE EXISTING RUBBER BUSHING, RETAIN FOR RE-INSTALLATION  
AFTER ALL OPERATIONS ARE COMPLETE
4. REAM EXISTING HOLE TO .369
5. WASH PRIME PER MIL-C-8514,  
EPOXY POLYAMIDE PRIME PER : MIL-P-23377, TYPE I, 1 COAT  
CARC PAINT PER : MIL-C-45168, 2 COATS, APPLY CARC PAINT  
PER : MIL-C-53072 CCF 36231 (GRAY) PER : FED-STD-595  
MASK HOLES FROM PRIME AND PAINT
6. INSTALL BUSHINGS AFTER FINISHES.  
INSTALL BUSHINGS WET WITH MIL-P-23377, TYPE 1, PRIMER

THIS DRAWING HAS BEEN GENERATED AND  
IS MAINTAINED BY A CAD SYSTEM.  
DO NOT SCALE THIS DRAWING

LITERATURE		DATE		APPROVED	
LTR	DESCRIPTION	DATE	APPROVED	DATE	APPROVED
2	BUSHING, PLAIN	80205	NAS75-4-003	EA	2
1	SURFACE-MOUNT CLAMP	39428	11355174	EA	1
		IDENTIFYING NO.		ZONE	
		CHAGE CODE		U/M	
		NOMENCLATURE			
		PARTS LIST			
		COMMITTEE NO.		SOFA	
		DAAB07-92-Z-B506			
		DATE			
		95-09-14			
		S.A.T.			
		FINISH:			
		XX ± .03 ± 1"			
		XXX ± .010			
		UH-60A			
		LEX-11375			
		LEX-11276			
		UH-60A			
		APPLICATION			
		PAGE 1/1		PAGE 1 OF 1	
		C7S976		LEX-11366 02	
		SERV-AIR, INC.		AN E-SYSTEMS COMPANY	
		CLAMP MODIFICATION			

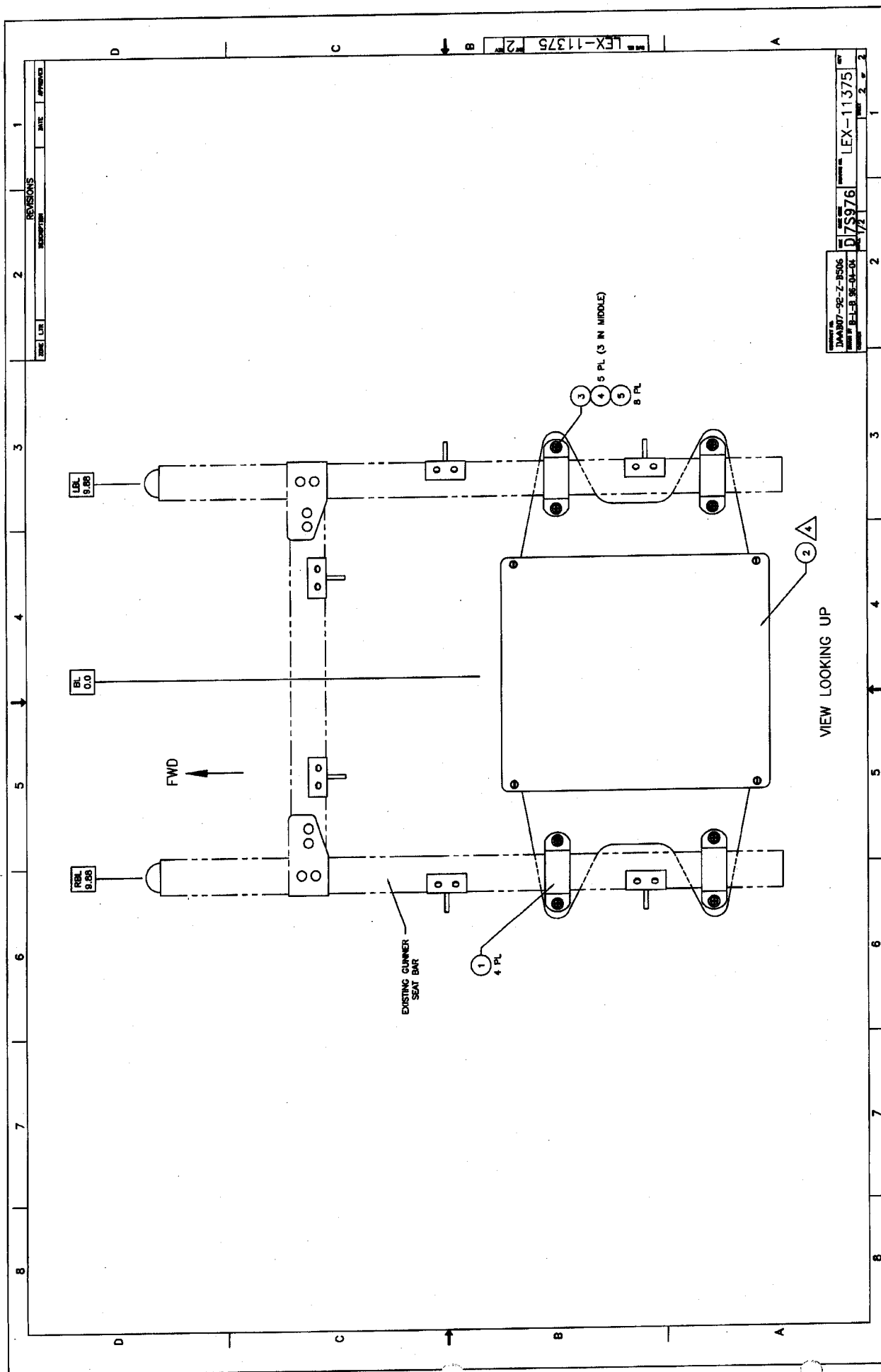
1. INTERPRET DRAWING PER MIL-STD-100:  
MIL-STD-12, ABBREVIATIONS  
ANSI Y14.5M-1982, DIMENSIONS AND TOLERANCES  
MIL-STD-130, IDENT MARKING

2. REMOVE BURRS AND BREAK ALL SHARP EDGES
3. INSTALLATION OF FASTENERS PER : MIL-STD-1515
4. POSITION FWD NO. 2 APPROXIMATELY AS SHOWN
5. SEE DRAWING LEX-11608 FOR THE ELECTRICAL SCHEMATIC

THIS DRAWING HAS BEEN GENERATED AND  
IS MAINTAINED BY A CAD SYSTEM.  
DO NOT SCALE THIS DRAWING

2		1	
REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED

[illegible]



# NOTES:

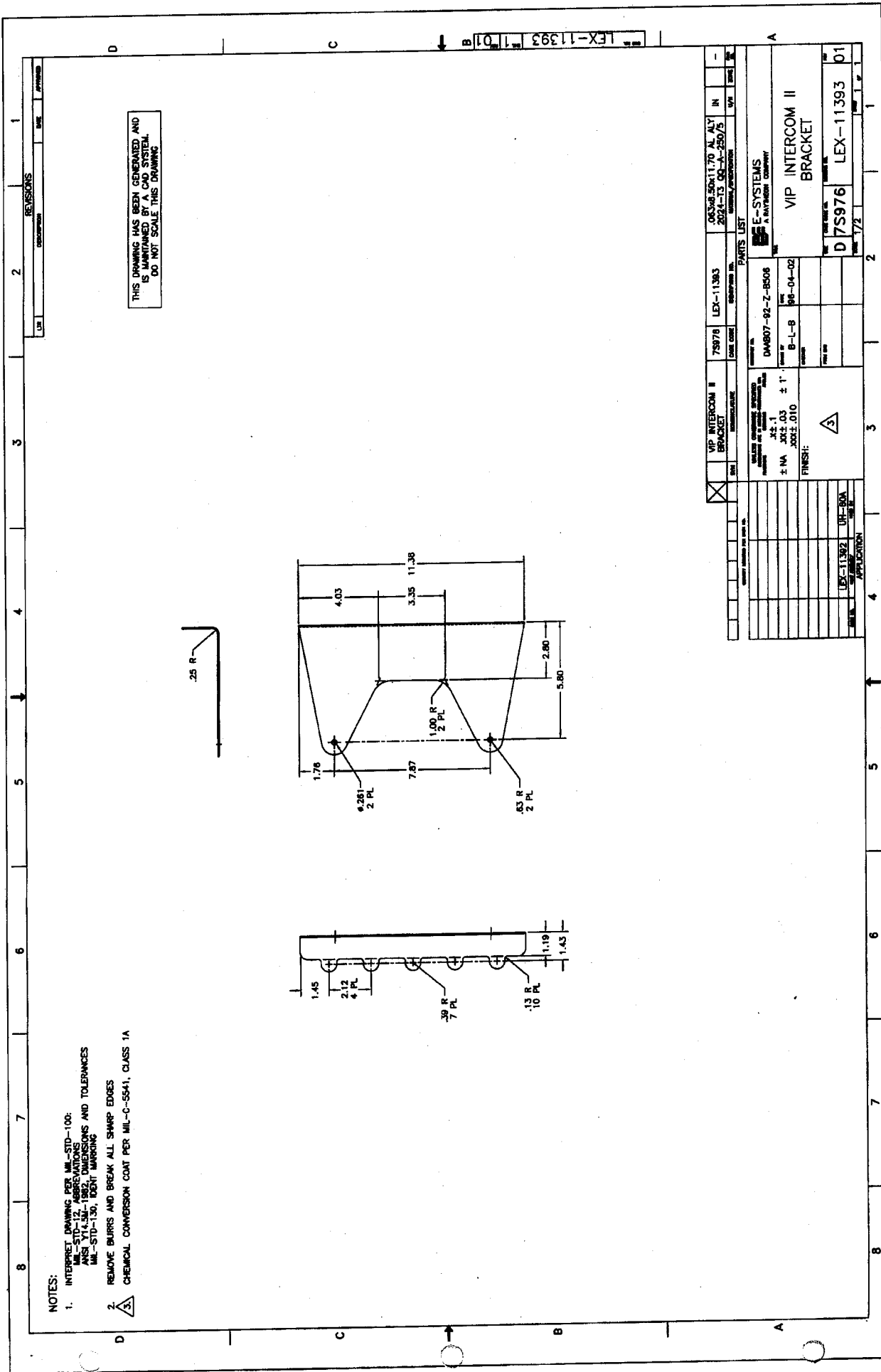
1. INTERPRET DRAWING PER ASME Y14.100.
2. REMOVE BURRS AND BREAK ALL SHARP EDGES
3. INSTALLATION OF FASTENERS PER MIL-STD-1515
4. USE LEX-11588 AND SEAL BAG TO LOCATE .261 DIA. HOLE PRIOR TO FORWARDING TO ELECTRICIANS
5. SEE LEX-11610 FOR ELECTRICAL BUILD-UP
6. LOCATE APPROXIMATELY AS SHOWN, SEAL WITH INSULATING VARNISH MIL-40058, TYPE AR OR EQUIVALENT.
7. EPOXY POLYIMIDE PRIME PER MIL-P-23377, TYPE I, 1 COAT PER MIL-C-13077, CO. 480231, (GRAY) PER FED-STD-595 PRIME AND PAINT EXTERIOR SURFACES ONLY
8. SQUEEZE RIVETS DURING FABRICATION, DO NOT BACK RIVETS.

THIS DRAWING HAS BEEN GENERATED AND IS MAINTAINED BY A CAD SYSTEM. DO NOT SCALE THIS DRAWING

PARTS LIST		QUANTITY		DESCRIPTION		MATERIAL/PROCESSING		UNIT		REV		DATE		APPROVED	
QTY	REV	QTY	REV	DESCRIPTION	MATERIAL/PROCESSING	UNIT	REV	DATE	APPROVED	QTY	REV	DATE	APPROVED	QTY	REV
1		1		DECAL, J12	LEX-11588-014	EA				1				1	
1		1		DECAL, J11	LEX-11588-013	EA				1				1	
1		1		DECAL, J10	LEX-11588-012	EA				1				1	
1		1		DECAL, J8	LEX-11588-011	EA				1				1	
1		1		DECAL, J6	LEX-11588-010	EA				1				1	
1		1		DECAL, J7	LEX-11588-009	EA				1				1	
1		1		DECAL, J6	LEX-11588-008	EA				1				1	
1		1		DECAL, J5	LEX-11588-007	EA				1				1	
1		1		DECAL, J4	LEX-11588-006	EA				1				1	
1		1		DECAL, J3	LEX-11588-005	EA				1				1	
1		1		DECAL, J2	LEX-11588-004	EA				1				1	
1		1		DECAL, ASSY	LEX-11588-003	EA				1				1	
1		1		DECAL, J200/P200R	LEX-11588-002	EA				1				1	
AR				ADHESIVE	ED1357	EA				1				1	
1		1		GROMMET	MS35489-11	EA				1				1	
32		32		RIVET	MS20470A05-5	EA				1				1	
2		2		RIVET	MS20470A04-5	EA				1				1	
1		1		ANGLE BRACKET	AN7A3Z13	EA				1				1	
1		1		VIP INTERCOM II ENCLOSURE	LEX-11392	EA				1				1	
1		1		DECAL, J1	LEX-11588-001	EA				1				1	
1		1		EXTENDED KS COVER	LEX-11364	EA				1				1	
2		2		VIP INTERCOM II BRACKET	LEX-11363	EA				1				1	

E-SYSTEMS		SOFA	
DA4807-82-Z-8506		VIP INTERCOM II	
B-L-8		ENCLOSURE ASSEMBLY	
B-L-8		LEX-11392	
D7S976		09	

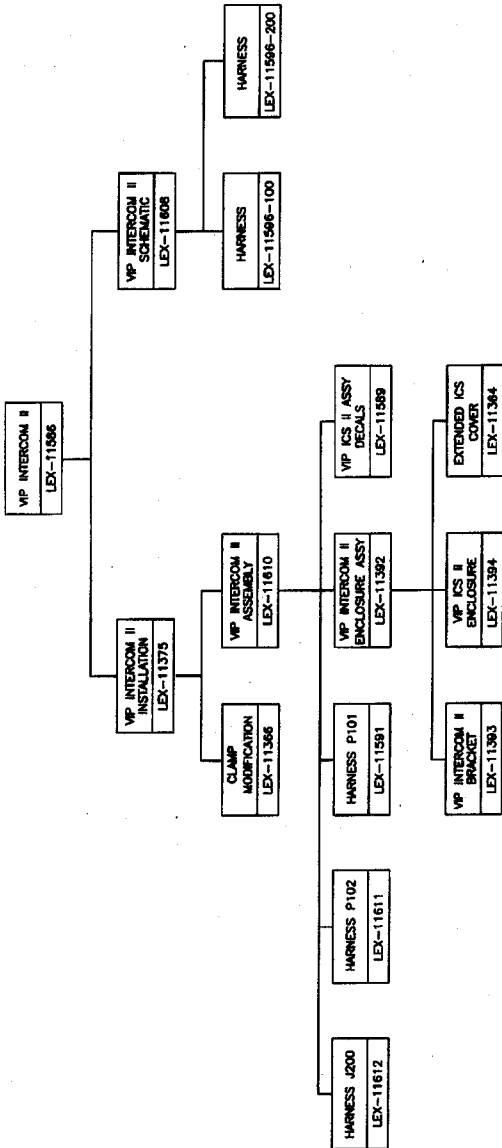




NOTES:

1. INTERPRET DRAWING PER MIL-STD-100.

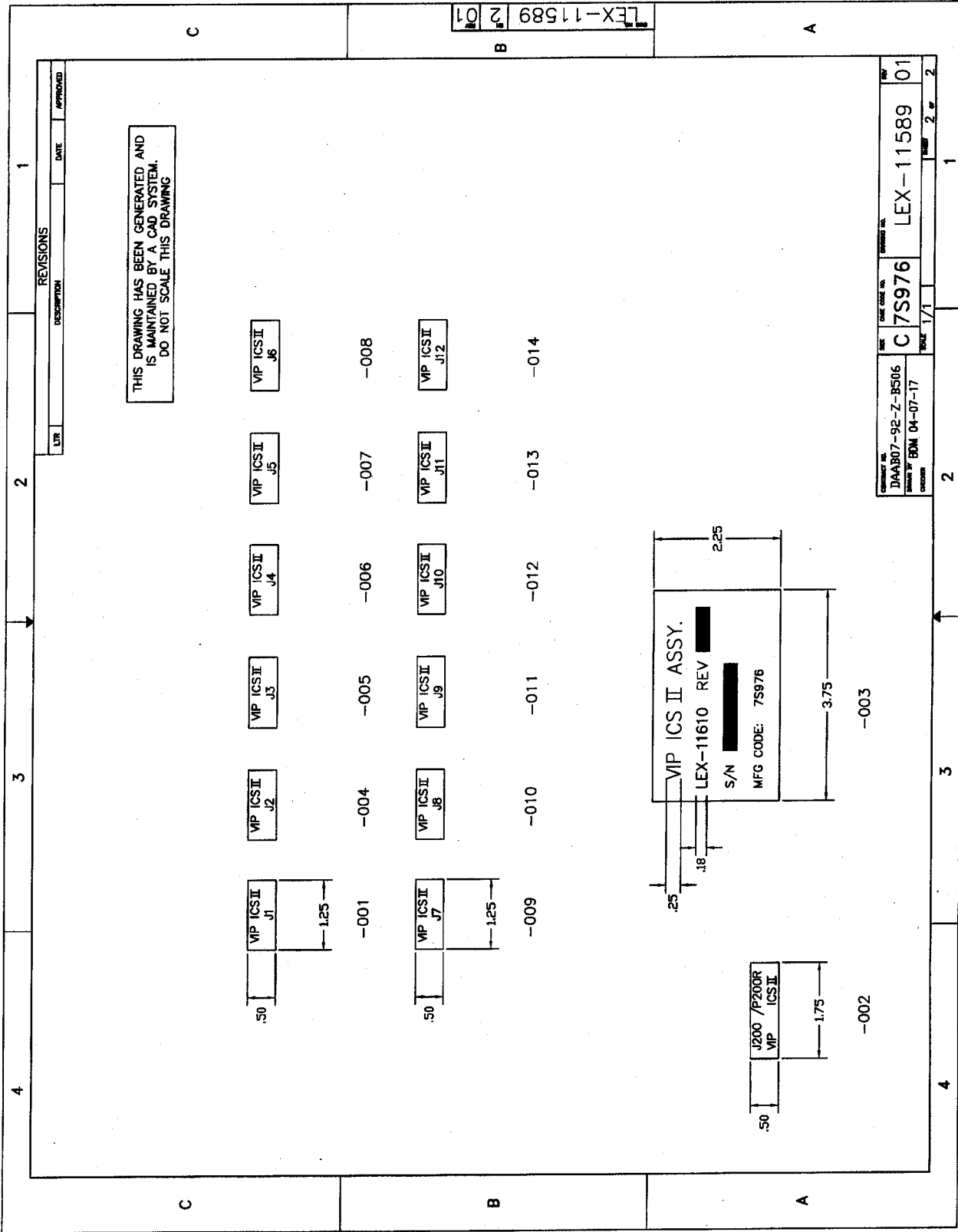
THIS DRAWING HAS BEEN GENERATED AND  
IS MAINTAINED BY A CAD SYSTEM.  
DO NOT SCALE THIS DRAWING



PARTS LIST		REVISIONS		DATE		APPROVED	
QTY	DESCRIPTION	DATE	BY	DATE	BY	DATE	BY
1	VIP INTERCOM II						
1	VIP INTERCOM II SCHEMATIC						
1	VIP INTERCOM II INSTALLATION						
1	VIP IC3 II ASSY DECALS						
1	VIP IC3 II ENCLOSURE						
1	VIP INTERCOM II BRACKET						
1	CLAMP MODIFICATION						
1	HARNESS P101						
1	HARNESS P102						
1	HARNESS						
1	HARNESS						
1	EXTENDED IC3 COVER						
1	VIP IC3 II ENCLOSURE ASSY						
1	VIP INTERCOM II ASSEMBLY						
1	VIP INTERCOM II SCHEMATIC						
1	VIP INTERCOM II INSTALLATION						
1	VIP INTERCOM II						

SERV-AIR, INC.		SOFA	
VIP INTERCOM II		DRAWING TREE	
D75976		LEX-11586 02	



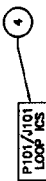


REVISIONS		
REV	DESCRIPTION	DATE
1		

DATE	DATE	DATE	DATE
04-07-17	04-07-17	04-07-17	04-07-17
01	01	01	01
01	01	01	01

LEX-11589 2 01

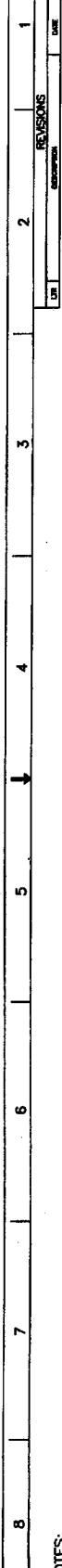
1. INTERPRET DRAWING PER ASME Y14.100.
2. ITEM IDENTIFICATION PER MIL-STD-130
3. FABRICATE AND INSPECT PER SAE-ASS0881
4. REFERENCE LEX-11610 FOR SCHEMATIC
5. BAG AND TAG REMAINING PART(S) WITH ASS
6. STAMP CABLE MARKERS AS SHOWN

[illegible]

24		SHEILD TERMINATOR	81349	M83518/2-8	MIL-S-83519	EA	9
180		CABLE, SHIELDED	81349	M27500-22SP/523	MIL-C-27500	IN	8
30		WIRE 22 AWG	81349	M22750/43-22-9	MIL-W-22750	IN	7
4		SPLICE	81349	M81824/1-2	MIL-S-81824	EA	6
2		SCREW LOCK	81349	M24308/25-9	MIL-C-24308	EA	5
1		CABLE MARKER	06080	CM-45E-1/2-4H-4		EA	4
4		SHEILD TERMINATOR	81349	M83518/2-7	MIL-S-83519	EA	3
30		CABLE, SHIELDED	81349	M27500-22SP/523	MIL-C-27500	IN	2
1		CONNECTOR	81349	M24308/2-4F	MIL-C-24308	EA	1

[illegible]

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**NOTES:**

1. INTERPRET DRAWING PER ASME Y14.100.
  2. ITEM IDENTIFICATION PER MIL-STD-130
  3. FABRICATE AND INSPECT PER SAE-AS50881
- △ STAMP MARKER SLEEVES AS SHOWN.  
ON CABLE, DO NOT SHRINK
- △ UNLINED WIRES WILL BE CUT FLUSH WITH  
OUTSIDE COVERING
- △ CABLE LENGTH IS 98 INCHES FOR -200  
CABLE LENGTH IS 144 INCHES FOR -100

[illegible]

# NOTES:

1. INTERPRET DRAWING PER ASME Y14.100.
2. FABRICATE AND INSPECT PER SAE-ASS0881
3. SEE TIA-11-1500-237-23-2, PP I FOR CONTINUATION.
4. CABLE ASSEMBLY CMTAT001YALRG-BW OR CMTAT001YALRG-BW MANUFACTURED BY COMMUNICATIONS INC. ONEONTA, NY. ARE PART NUMBERS THAT HAVE BEEN UPDATED. CMTAT001YALRG-BW 15 FT COILED, 6 TO 8 FT EXTENDED. CMTAT317K10-BW 5 FT COILED, 10 TO 14 FT EXTENDED.
5. LOOSE EQUIPMENT, QTY MAY CHANGE WITH ACCORDANCE TO CUSTOMERS DESIRE.

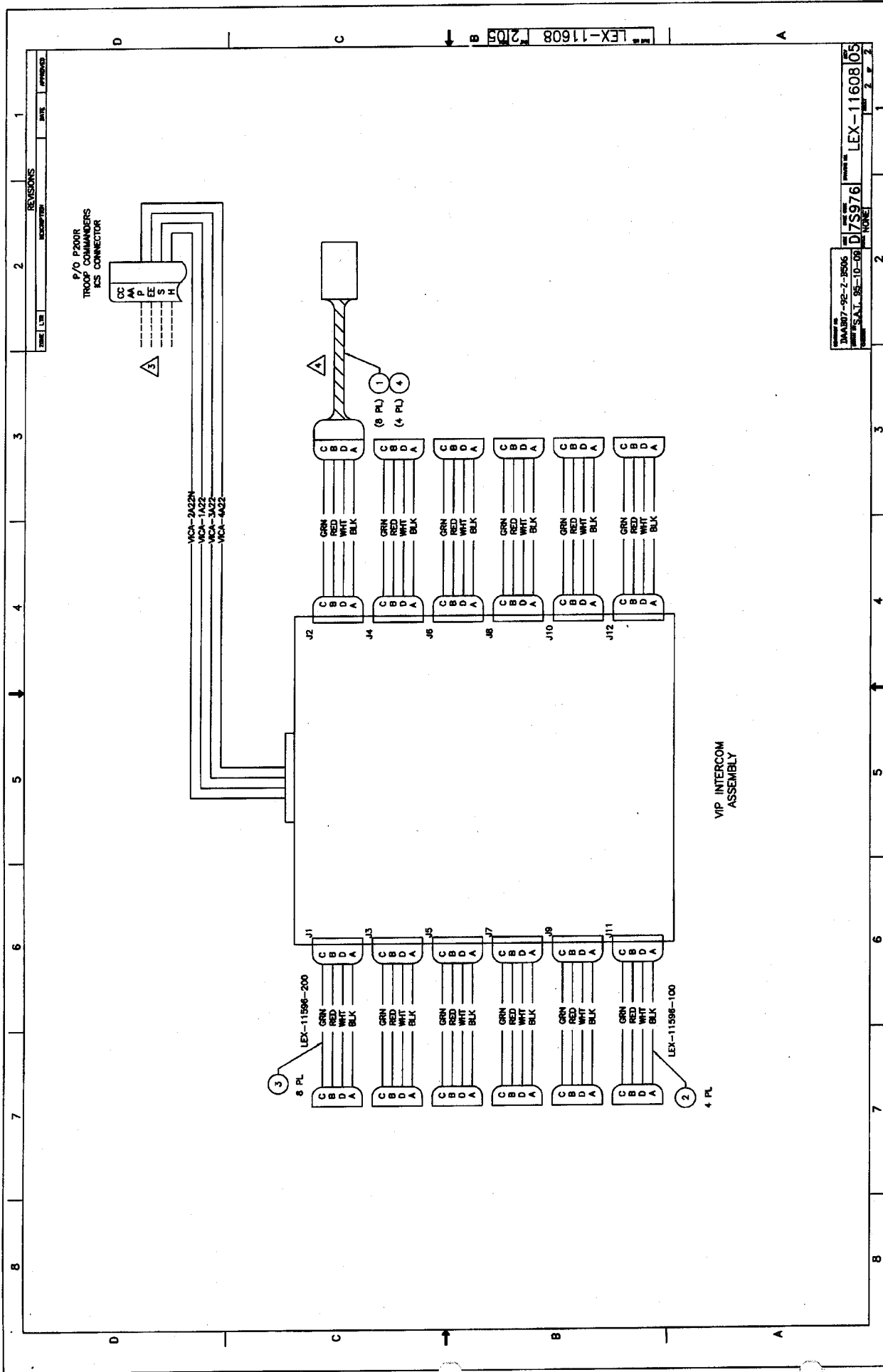
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01	CHG PER DCA 1488-0075 85-10-18 85-10-31	
02	CHG PER DCA 1488-0138 85-11-07 85-11-08	
03	CHG PER DCA 1488-0560 85-10-01 85-10-01	
04	CHG PER PROGRAM OFFICE REQUEST 87-08-03 JAK	
05	CHG PER PARTS & QTY CORRS	
06	CHG PER PARTS & QTY CORRS	
07	CHG PER PARTS & QTY CORRS	
08	CHG PER PARTS & QTY CORRS	

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ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
12	HEADSET	71483	H10-76	
4	ICS CORD	CMTAT317K10-BW		
8	CABLE (96" LONG)	75976	LEX-11596-200	
4	CABLE (144" LONG)	75976	LEX-11596-100	
8	ICS CORD	CMTAT317K10-BW		
8	VP INTERCOM II SCHEMATIC	75976	LEX-11608	

SERV-AIR, INC. SOFSA	
DA807-92-Z-6506	
± 1/4"	± 1"
± 1/4"	± 1"
FINISH:	
D 75976 LEX-11608 08	

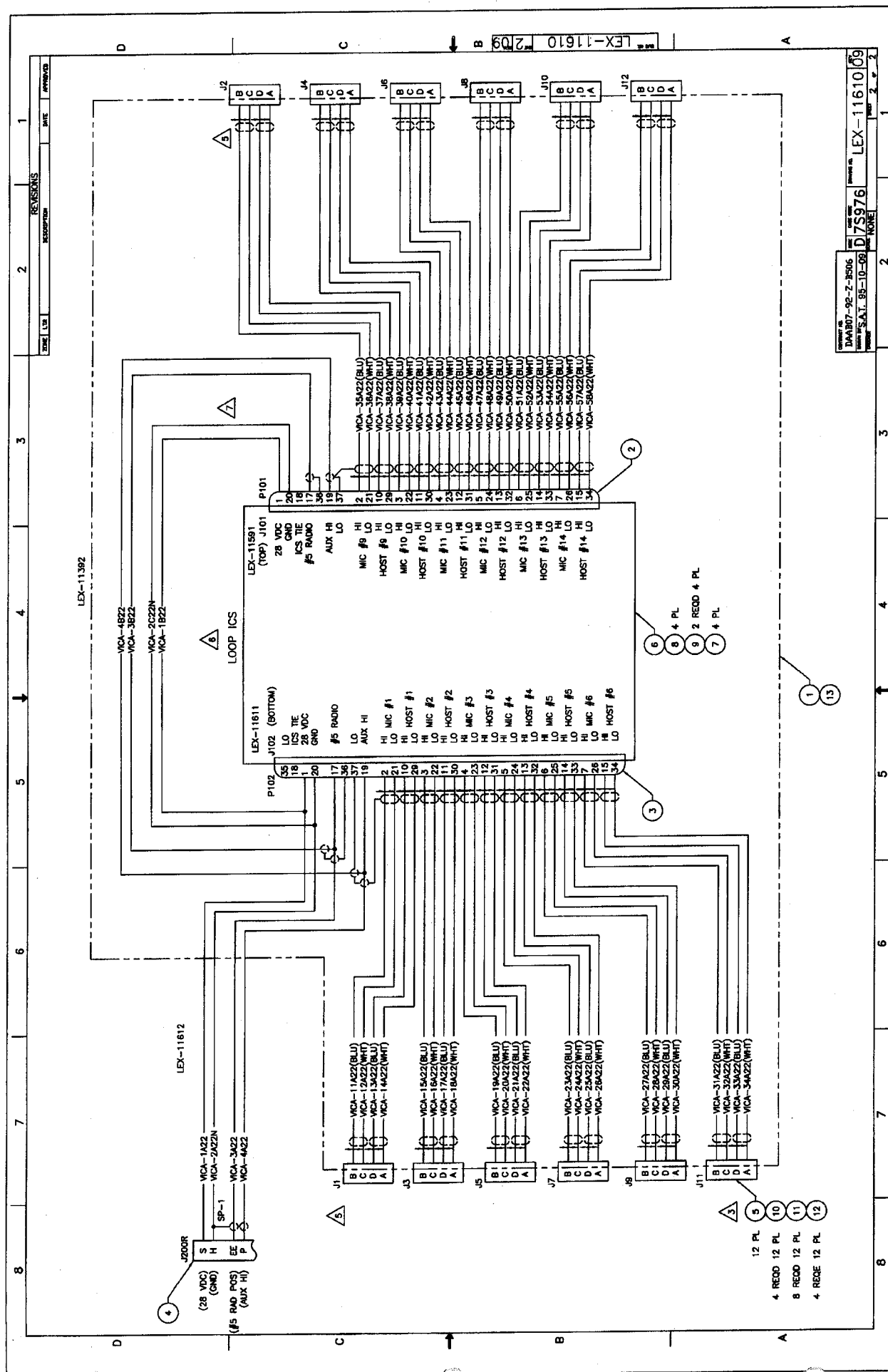
05 08	REVISION	BY	DATE
2 1	SHEET		

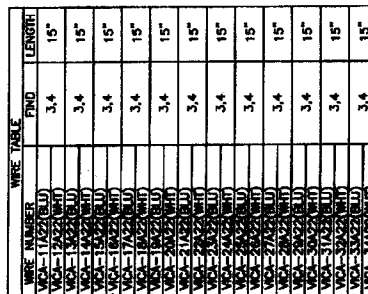


D7S976  
 LEX-11608 05  
 D7S976  
 LEX-11608 05

# NOTES:

1. INTERPRET DRAWING PER ASME Y14.100.
2. FABRICATE AND INSPECT PER SAE-ASS0081
3. CONNECTORS MOUNT FROM INSIDE BOX WITH KEYWAY UP TOWARD MOUNT BRACKETS
4. ITEM IDENTIFICATION PER MIL-STD-130
5. WITH ENCLOSURE FACING UP, COVER OFF AND CABLE TO JUMPER CONNECTOR AT "TOP", J1 IS THE UPPER RIGHT CONNECTOR.
6. LOOP ICS CONNECTORS FACE GROMMET END OF ENCLOSURE
7. LOOP ICS AS38-403 IS REPLACED BY A38-301. FOR MODIFICATIONS DONE PRIOR TO 2003 JUMPER WILL NEED TO BE PLACED IN FROM CONNECTOR P102, PMS 1, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 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2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2





**NOTES:**

1. INTERPRET DRAWING PER ASME Y14.100.
2. ITEM IDENTIFICATION PER MIL-STD-130
3. FABRICATE AND INSPECT PER SAE-ASS08B1
4. REFERENCE LEX-11610 FOR SCHEMATIC
5. BAG AND TAG REMAINING PART(S) WITH ASSOCIATED HARNESS ASSEMBLIES
6. STAMP CABLE MARKERS AS SHOWN

LEAVE TERMINATOR LOOSE FOR TERMINATION DURING INSTALL

THIS DRAWING HAS BEEN GENERATED AND  
IS MAINTAINED BY A CAD SYSTEM.  
DO NOT SCALE THIS DRAWING

P102/J102  
100B WSC

(LEAVE OPEN)

**STATEMENT OF WORK  
FOR  
DOPPLER GPS NAVIGATION SYSTEM (DGNS)  
INSTALLATION**

**1.0**        **SCOPE:** This Statement of Work (SOW) defines the effort required to install DGNS kits to include consumables into three UH-60A/L aircraft.

**2.0**        **REQUIREMENTS:**

**2.1**        **GOVERNMENT FURNISHED EQUIPMENT:** The Government will provide three each UH-60A/L aircraft as GFE at dates and locations to be mutually agreed upon:

**2.2**        **GOVERNMENT FURNISHED INFORMATION:** The Government will provide the DGNS MWO 1-1520-237-50-92, Revision G, dated 2 Mar 06.

**2.3**        **KIT INSTALLATION:** The Contractor shall install the three each DGNS kits IAW the DGNS MWO 1-1520-237-50-92, Revision F, dated 29 Jun 05 provided as GFI. The Contractor shall perform the installations in Huntsville, AL.

**2.4**        **QUALITY ASSURANCE:** The Contractor shall implement a quality system that satisfies the program objectives IAW ANSI/ASQ-Q9001.

**2.5**        **INSPECTION AND ACCEPTANCE:** The Government, using a Government Technical Inspector, will inspect and accept all work using DD Form 250.



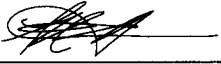
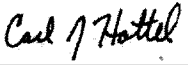
**2.6**        **PERIOD OF PERFORMANCE:** The Period of Performance for this contract shall end one year after contract award.

# MODIFICATION WORK ORDER

## UH-60A/L DGNS P3I Modification

**DRAWING NUMBER: A241732D001**

**Revision: G**  
**Revision Date: 3/2/06**

Prepared By:	 Mark Rivera Principal Engineer	Date: 06/25/04
Reviewed By:	 Robert Soboleski Chief Engineer	Date: 06/26/04
Released By:	 Scott Turnquist Program Manager	Date: 09/23/04
Released By:	 Carl Hottel Project Leader	Date: 04/21/05

A  
2551 Riva Road  
Annapolis, Maryland 21401

# ROUTINE

MWO effective date is 30 June 04 and completion date is 30 June 06.

**MWO 1-1520-237-50-92**

## **MODIFICATION WORK ORDER**

### **MODIFICATION INSTRUCTIONS FOR THE INSTALLATION OF THE DOPPLER GPS NAVIGATION SET PREPLANNED PRODUCT IMPROVEMENT (DGNS P3I) ON THE UH-60A/L HELICOPTER**

**(NSN 1520-01-035-0266) (EIC RSA)  
(NSN 1510-01-298-4532) (EIC RSM)**

U.S. Army Aviation and Missile Command, Redstone Arsenal, AL 35898  
30 June 2004

#### **REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028, (Recommended Changes to Publications and Blank Forms), direct to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5000. You may also submit your recommended changes by e-mail directly to [ls-lp@redstone.army.mil](mailto:ls-lp@redstone.army.mil). A reply will be provided to you.

**DISTRIBUTION STATEMENT A.** Approved for public release; distribution is unlimited.

1. **PURPOSE.** This modification provides the installation of the AN/ASN-128D Doppler GPS for the UH-60 helicopter.
2. **PRIORITY.** This modification is classified ROUTINE.

This publication is not available through U.S. Army Publication Distribution Centers. It must be obtained from U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5230.

#### **3. END ITEM TO BE MODIFIED.**

- a. All UH-60A/L helicopter will be modified in accordance with the instructions contained in paragraph 10.

- b. The following helicopter was modified during validation:

<b>NOMENCLATURE</b>	<b>NSN</b>	<b>MODEL</b>	<b>SERIAL NUMBER</b>
Helicopter	1520-01-035-0266	UH-60A	84-24390

- c. The following helicopter was modified during verification:

<b>NOMENCLATURE</b>	<b>NSN</b>	<b>MODEL</b>	<b>SERIAL NUMBER</b>
Helicopter	1520-01-298-4532	UH-60L	98-26795

**4. MODULES. (Components, Assemblies, Subassemblies, Boards, and Cards) TO BE MODIFIED.**

<b>NOMENCLATURE</b>	<b>NSN</b>
Computer Display Unit	5841-01-063-1918

**5. PARTS TO BE MODIFIED.** Not Applicable.

**6. APPLICATION.**

- a. Time compliance schedule: The effective date of this MWO is 27 February 2004 and its completion date is 27 February 2006.
- b. Level of Maintenance: Depot or Contractor Field Team (CFT).
- c. Requirements: Work force and man-hours requirements for application of this MWO

<b>WORKFORCE/SKILL</b>	<b>MANHOURS</b>
1 Aircraft Avionics Technician	2
1 Aircraft Sheet Metal Mechanic	24
1 Aircraft Electrician	60*
1 Aircraft Inspector	4

\*Includes operational checks.  
Total man-hours for single aircraft application is 90 hours.

- d. Other MWO's that must be applied prior to or concurrently with the application of this MWO: Not Applicable.
- e. Additional Information: Not Applicable.

**7. TECHNICAL PUBLICATIONS.** Affected/changed technical publications:

TM 1-1520-237-10, Current Version  
TM 1-1520-237-23P-1, Current Version  
TM 1-1520-237-23P-2, Current Version  
TM 1-1520-237-23P-3, Current Version  
TM 1-1520-237-23P-4, Current Version  
TM 1-1520-237-23P-5, Current Version  
TM 1-1520-237-23P-6, Current Version  
TM 1-1520-237-MTF, Current Version  
TM 11-1520-237-23, Current Version  
TM 11-1520-237-23P, Current Version

UPDATED 3/30/05

**8. MWO KIT (S)/PART (S) AND DISPOSITION.**

a. Kits/Parts required to accomplish MWO.

(1) Kits required to accomplish this MWO are:

<b>NOMENCLATURE/ NSN</b>	<b>WEIGHT (POUNDS)</b>	<b>DIMENSIONS (INCHES)</b>	<b>DISPLACEMENT (FEET CUBED)</b>
1005436-10	0.6		
1005437-10	3.3		
1005440-10	11.1		
1005442-10	4.0		

(2) Contents of kits:

<b>KIT PART NO.</b>	<b>NOMENCLATURE</b>	<b><u>B-KIT</u> NSN</b>	<b>CAGE</b>	<b>PART NUMBER</b>	<b>QTY</b>
	Signal Data Converter	**	0D0D0	P320A002-02	1
<b>KIT PART NO.</b>	<b>NOMENCLATURE</b>	<b><u>A-KIT</u> NSN</b>	<b>CAGE</b>	<b>PART NUMBER</b>	<b>QTY</b>
	Data Transfer Device	**		D6291000001	1
	PCMCIA Memory Card (Preprogrammed with a sample DAFIF database)	7025-01-504-6382	1BKB7	MR016ATA38PC	1
1005436-10	Cockpit Instrument Panel Installation		81996		1
	Decal	**	81996	1005441-01	1
	Decal	**	81996	1005441-03	1
	Decal	**	81996	1005441-05	1
	Decal	**	81996	1005441-07	1
	Decal	**	81996	1005441-09	1
	Decal	**	81996	1005441-11	1
	Annunciator	**	32245	LED-40-18-KG-31936	2
	Annunciator	**	32245	LED-40-18-KG-31937	2
	Annunciator	**	32245	LED-40-18-KG-31938	2
	Template	**	81996	1005439-05	1
1005437-10	Relay Bracket Installation		81996		1
	Assembly, Pilot Relay Bracket	**	81996	1005477-10	1
	Assembly, Copilot Relay Bracket	**	81996	1005478-10	1
	Clip Assembly	**	81996	1005439-10	8
	Shim	**	81996	1005439-03	4
	Rivet, Cherrymax	5320-01-258-6058	11815	CR3212-4-03	14
	Rivet, Cherrymax	5320-01-485-9218	11815	CR3213-4-02	16
	Rivet, Cherrymax	5320-01-258-6058	11815	CR3213-4-03	2
	Washer, Flat	5310-01-105-7241	80205	NAS1149D0332J	8
	Screw, Hex HD	5305-01-089-1520	80205	NAS1801-3-8	8
1005440-10	Nose Compartment Installation		81996		1
	Assembly, Harness W01-P701R	**	81996	1005457-10	1
	Decal	**	81996	1005441-67	1
	Decal	**	81996	1005441-69	1
	Screw, Machine	5305-01-078-2343	80205	NAS1801-3-5	2

KIT PART NO.	NOMENCLATURE	NSN	CAGE	PART NUMBER	QTY
	Washer, Flat	5310-01-352-7382	80205	NAS1149D0332J	2
	Clamp	5340-01-353-0565	71296	7C27-6BA	1
	Clamp	5342-00-751-9767	71296	7C27-13BA	1
	Clamp, Loop	5340-00-291-5322	96906	MS21919WDG3	1
	Insert	5325-00-849-4018	97499	80-004-2-6	2
1005442-10	Wire Routing		81996		1
	Harness Install, W1 (consisting of)	**	81996	1005458-10	1
	Contact	5999-00-172-8253	81349	M39029/5-115	6
	Contact	5999-00-320-7459	81349	M39029/56-348	6
	Contact	5999-00-152-9574	81349	M39029/56-351	1
	Contact	5999-01-034-0716	81349	M39029/56-352	1
	Contact	5999-00-239-3338	81349	M39029/63-368	4
	Splice	5940-00-271-7741	81343	M81824/1-2	4
	Shield	5940-01-136-2540	81343	M83519/1-2	3
	Shield	5940-01-135-7086	81343	M83519/2-8	9
	Lug	5940-00-191-2708	81349	M7928/1-14	4
	Harness Assembly, W1 (consisting of)	**	81996	1005445-10	1
	Wire	6145-01-110-8894	81349	M22759/34-22-9	2
	Cable Marker	7690-01-384-4003	06090	CM-SCE-1/2-4H-9	1
	Harness Install, W2 (consisting of)	**	81996	1005459-10	1
	Lug	5940-00-191-2708	81349	M7928/1-14	2
	Contact	5999-00-146-8592	81349	M39029/4-110	3
	Contact	5999-00-172-8253	81349	M39029/5-115	6
	Contact	5999-00-320-7459	81349	M39029/56-348	7
	Shield	5940-01-136-2540	81343	M83519/1-2	4
	Splice	5940-00-271-7741	81343	M81824/1-2	4
	Shield	5940-01-135-7086	81343	M83519/2-8	4
	Harness Assembly, W2 (consisting of)	**	81996	1005446-10	1
	Wire	6145-01-110-8894	81349	M22759/34-22-9	1
	Loose Connector Contacts	5999-00-320-7459	81349	M39029/56-348	27
	Harness Install, W5 (consisting of)	**	81996	1005462-10	1
	Contact	5999-00-172-8253	81349	M39029/5-115	8
	Contact	5999-00-320-7459	81349	M39029/56-348	6
	Lug	5940-00-191-2708	81349	M7928/1-13	2
	Shield	5940-01-136-2540	81343	M83519/1-2	4
	Shield	5940-01-135-7086	81343	M83519/2-8	4
	Splice	5940-00-271-7741	81343	M81824/1-2	2
	Harness Assembly, W5 (consisting of)	**	81996	1005449-10	1
	Wire	6145-01-110-8894	81349	M22759/34-22-9	3
	Wire	6145-01-152-7561	81349	M27500-22SD2T23	4
	Shield	5940-01-135-7086	81343	M83519/2-8	4
	Harness Install, W01-P700R (consisting of)	**	81996	1005463-10	1
	Harness Assembly	**	81996	1005450-10	1

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KIT PART NO.	NOMENCLATURE	NSN	CAGE	PART NUMBER	QTY
	Loose Connector Contacts	5999-00-320-7459	81349	M39029/56-348	11
	Lug	5940-00-191-2708	81349	M7928/1-13	1
	Sealing Plug	5935-00-496-7171	96906	MS27488-20	23
	Shield	5940-01-135-7086	81343	M83519/2-8	1
	Connector, Backshell	5935-01-225-8980	81346	M85049/48-1-3	1
	Connector	5935-01-460-0059	71468	GDB-25S	1
	Screw Lock	5935-00-193-4435	71468	D20419-21	2
	Harness Install, W01-DGNS1	**	81996	1005464-10	1
	Harness Install, W01-DGNS2	**	81996	1005465-10	1
	Harness Install, W01-DGNS3	**	81996	1005466-10	1
	Harness Install, W01-DGNS4	**	81996	1005467-10	1
	Harness Install, W01-DGNS5	**	81996	1005468-10	1
	Harness Install, W01-DGNS6	**	81996	1005469-10	1
	Washer, Flat	5310-01-105-7241	80205	NAS1149D0332J	50
	Nut, Self-locking	5310-00-877-5797	80205	MS21044N3	10
	Screw, Machine	5305-01-089-1520	80205	NAS1801-3-8	15
	Screw, Machine	5305-01-077-9906	80205	NAS1801-3-10	10
	Screw, Machine	5305-01-073-9162	80205	NAS1801-3-12	15
	Screw, Machine	5305-01-077-9907	80205	NAS1801-3-16	10
	Screw, Machine	5305-01-115-3413	80205	NAS1801-3-24	5
	Spacer	5365-01-452-8543	80205	NAS43DD3-32	10
	Clamp, Loop	5340-00-584-6556	96906	MS21919WDG10	10
	Clamp, Loop	5340-00-664-8163	96906	MS21919WDG11	5
	Clamp, Loop	5340-00-286-9427	96906	MS21919WDG12	5
	Clamp, Loop	5340-00-286-9421	96906	MS21919WDG13	5
	Clamp, Loop	5340-00-286-9424	96906	MS21919WDG14	5
	Clamp, Loop	5340-00-664-8164	96906	MS21919WDG15	5
	Clamp, Loop	5340-00-286-9418	96906	MS21919WDG16	5
	Strap, Tiedown	5975-00-111-3208	96906	MS3367-5-9	200
	Strap, Tiedown	5975-00-156-3253	96906	MS3367-2-9	125
	Spacer	5365-00-662-3100	80205	NAS43DD3-64	5

\*\*NSN not assigned

b. Bulk and Consumable Materials. The following items are not part of the kit and will be requisitioned.

NOMENCLATURE	NSN	CAGE	PART NUMBER	QTY
Masking Tape				
Acetone	6810-00-184-4796	81348	O-A-51	AR
Adhesive	8040-01-126-6270	12405	EA9309NA	AR
Alodine 1200 Kit	8030-00-779-4699	84063	Alodine 1200	AR
Cap, Wire	5999-00-280-3499	96906	MS25274-2	AR
Cloth, Cheese	8305-00-267-3015	81348	CCC-C440	AR
Cotton Swabs	8320-01-362-5829	17794	6003-0019	AR
CTG, Urethane - Color 37038 (black)	**	81349	MIL-PRF-85285 Type 1	AR
Epoxy Primer	8010-00-142-9279	81349	MIL-P-23377 TY I CL C	AR
Lacing Tape	4020-00-956-4754	58536	A-A-52081-C-3	AR
Lexan	**	39428	8574K26	AR
Rubber Gloves	8415-00-266-8677	81348	ZZ-G-381	AR
Solder, Elect	**	03051	SN60AWROL1	AR
Tape, Insulation	5970-00-955-9976	81349	MIL-I-46852	AR
Tool, Extraction, Green and White	5120-01-367-0267	11851	M81969/14-01	AR
Tool, Extraction, Red and White	5120-01-359-6039	11851	M81969/1-02	AR
Wire Safety	9525-00-618-0257	96906	MS20995NC20	AR
120 Grit Sanding Disk	**	39428	4701A355	AR

\*\*NSN not assigned

**c. Parts Disposition**

- (1) Disposition of parts removed and not used during installation of this MWO will be in accordance with drawing A241732D002 and proper disposal procedures. Refer to the following for additional information.

- a. Disposal/Redistribution of Displaced Materiel  
(SDC pn CV-3338A/ASN-128B).

(SDC pn CV-3338A/ASN-128B), The OLR installation team will turn in the replaced SDC systems back to CECOM (B16) within 30 days from removal. Form DD-1348A Issue release/Receipt document needs to be returned with the hardware. Blocks to fill in are: Quantity; 2. Ship From / TO; 5. date; and 25. NSN. The returned hardware can be repackaged in the SDC 128D container and will be shipped to the following address:

**MO/AVCRAD SHOP**  
**ATTN John Wagemann (417-874-7315)**  
**5141 W CARGO ST**  
**Springfield MO 65803-9512**

The AN/ASN-128B item manager is Anthony Santarsiero DSN: 992-1192, [anthony.santarsiero@us.army.mil](mailto:anthony.santarsiero@us.army.mil)

- (2) Disposition of parts removed and retained for reinstallation will be in accordance with drawing A241732D002 and proper installation procedures.

**9. SPECIAL TOOLS, JIGS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE), AND FIXTURES REQUIRED.**

- a. Basic Mechanic's Tool Box, Basic Electrician's Tool Box, and Airframe Repairman Toolbox.
- b. Special Tools, Jigs, and Fixtures: Crimp Die Set P/N: 190318, Crimp Tool P/N: M22520/5-01.
- c. Test Equipment: Use the following items or equivalent.

<b>NOMENCLATURE</b>	<b>NSN</b>	<b>CAGE</b>	<b>PART NUMBER</b>	<b>QTY</b>
Multimeter	6625-01-265-6000	80058	AN/PSM-45	1
Digital Low Resistance Ohmmeter	**	88848	247001	1
Laptop Computer*	**			1
Software Load Cable	**	81996	1005472-10	1
Extraction Tool (Annunciator)	5120-01-377-4599	32245	M22885/108T8234	1
Software Loader Verifier for DGNS ASN/128D Control Display Unit (CDU)	**	80063		1

\*Laptop to be installed with Windows 98 or 2000

\*\*NSN not assigned

Equivalent items acceptable.

**10. MODIFICATION PROCEDURES.**

**CAUTION**

**Assure that a FOD prevention program is being implemented during the MWO compliance in accordance with AR 385-95.**

**WARNING**

**Serious hearing loss and eye injury can occur. Wear ear and eye protection.**

Before beginning the modification procedure, use the list of parts and materials in paragraph 8 to perform an inventory to ensure that all materials are available and in a useable condition.

a. Preparation.

- (1) Inventory kit.
- (2) Review installation instructions and drawings.
- (3) Perform Base Line System Test

**Base Line Test**

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Perform Self Test			
Set <b>MODE</b> selector to <b>GPS LDG</b>			
Set <b>DISPLAY</b> selector to <b>GS/TK/NAV M</b>	The display indicates the current GPS and navigation mode on the top line: (a) Selected fly to waypoint. (b) EPE (GPS estimated position error in meters). (c) GPS mode of operation: <b>M</b> for mixed <b>C/A</b> and <b>P/Y</b> code GPS reception. <b>Y</b> for only <b>Y</b> code GPS reception. (d) DGNS mode of operation (e) Target destination where the present position will be stored next time <b>TGT/STR</b> is pressed.		
Press <b>KYBD</b> key	On the display, the GPS mode of operation is blinking		
Press <b>LTR LEFT</b> followed by key <b>5</b>	On the display, the GPS mode of operation displays <b>M</b> and is blinking		
Press <b>ENT</b> key	The entire display blanks out for less than one second and the center display will now indicates <b>M</b>		
Set <b>MODE</b> selector to <b>LAMP TEST</b>	All edge lighting illuminates The MAL lamp illuminates		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Set <b>MODE</b> selector to <b>TEST</b>	After Doppler and/or GPS self tests have completed (approximately 15 seconds for Doppler, up to 2 minutes for GPS), one of the following displays is observed in the left and right displays (See chart below for possible test results) (See Note G)		
Self Test Results			
	Left Display	Right Display	Remarks
	GO		Doppler has completed BIT and is operating satisfactorily, GPS is still performing BIT (GPS has a two minute BIT cycle maximum). Note that a rotating bar in the display indicates that the GPS is still performing self test.
	GO	ALL	The entire system has completed BIT and is operating satisfactorily.
	GO	P	Pitch or Roll data is missing or exceeds 90°. In this case, pitch and roll in the computer are both set to zero and navigation in the Doppler mode continues with degraded operation. Problem may be in the vertical gyro or aircraft cabling.
	NG	C, R, S, or H followed by a numeric code	A failure has occurred in the computer display unit or the signal data converter power supply. The operator should not use the system.
	DN	GPS failure code	GPS has failed, but operator can use Doppler to perform all navigation.
	DF	Doppler failure code	Doppler has failed. GPS is still performing self test.
	GN	Doppler failure code	Doppler has failed but operator can use GPS to perform all navigation.
Press the <b>DIM</b> button ten times	LCD display dims		
Press the <b>BRT</b> button ten times	LCD display brightens		
Enter Datum and Destination in MGRS			
Set the <b>MODE</b> selector to <b>MGRS</b> position			
Set the <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b>			

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press the <b>KYBD</b> key			
Press <b>2, 5, ENT</b>	The display shows <b>DATUM: 25</b>		
Set the <b>DISPLAY</b> selector to <b>WP/TGT</b>	If no data, displays stars, <b>*****</b> ...		
Press <b>2, 0</b>	The destination number changes to <b>20</b>		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Zone field blinks		
Press <b>1, 8; LTR MID, 7</b>	<b>18T</b> appears in the Zone field		
Press the <b>KYBD</b> key	Area and northing/easting blinks		
Press <b>LTR MID, 8, LTR MID, 5, KYBD, 5, 0, 0, 0, 6, 0, 0, 0</b>	<b>WN5000 6000</b> appears in the area and northing/easting fields		
Press the <b>KYBD</b> key	Location Name/ICAO blinks		
Press <b>LTR MID, 1, LTR LEFT, 1, LTR MID, 5, LTR LEFT, 2, LTR RIGHT, 5</b>	<b>BANDO</b> appears in the Location/ICAO field		
Press <b>ENT</b>	Zone, area, easting/northing coordinates, destination number, and location name/ICAO are displayed		
Press <b>ENT</b>	Display shows glide slope, IAC, ALT, and V		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Magnetic Variation Field (V: ) blinks		
Enter <b>E, 0, 0, 1, 2</b>	Display shows <b>V:E001.2</b> (V: cannot be entered for waypoints with target motion)		
Press the <b>KYBD</b> key	Glide Slope field blinks		
Press <b>8</b>	Glide slope field changes to <b>8°</b>		
Press the <b>KYBD</b> key	IAC (Initial Approach Course) field blinks		
Press <b>2, 7, 0</b>	IAC field changes to <b>270°</b>		
Press the <b>KYBD</b> key	ALT field blinks		
Press the <b>INC (+)</b> key	ALT field shows + (positive altitude)		
Press <b>2, 3, 0</b>	ALT field changes to <b>230 meters</b> (leading zeros may be omitted)		
Press <b>ENT</b>	Glide slope, IAC, ALT, and V are displayed		
Press <b>ENT</b>	Display shows target motion and direction		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Speed field blinks		
Press <b>0, 4, 0</b> ( <i>no blank fields</i> )	Speed field changes to <b>040</b>		
Press the <b>KYBD</b> key	Direction field blinks		
Press <b>1, 2, 8</b> ( <i>no blank fields</i> )	Direction field changes to <b>128°</b>		
Press <b>ENT</b>	Target motion and direction are displayed		
Set the <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b>			
Press the <b>KYBD</b> key			
Press <b>LTR RIGHT, 6, LTR LEFT, 2, LTR MID, 8, ENT</b>	Display shows <b>DATUM: RDW</b>		
Press <b>ENT</b>	<b>DATUM: 25</b>		
Set <b>MODE</b> selector to <b>OFF</b> (Test Complete)	Performs proper shut-down		

Notes:

- A. In the event the **TEST** mode display is not **GO ALL**, the system should be recycled through **OFF** to verify the failure is a momentary one.
- b. Removal Procedure.
  - (1) Remove aircraft battery cover from STA 247.0 at LBL 20.0.
  - (2) Disconnect Battery.
  - (3) Remove forward center console kick panel on pilot side at RBL 10.0 between STA 187.0 i. and 197.0. Retain hardware for reinstallation.

**WARNING**

**Power supply contains a capacitor within the unit. A potential shock hazard exists on connector pin D and power supply fuse.**

- (4) Remove items listed in Equipment Removal List A241732D002.
  - a. VOR Receiver– Forward Center Console
  - b. Power Supply (pn 58910-PS622) – Nose Compartment
  - c. Computer Display Unit (pn CP-1252/ASN-128) – Center Pedestal
  - d. Signal Data Converter (pn CV-3338A/ASN-128B) – Nose Compartment
  - e. ADF ARN-149 – Nose Compartment (if installed)
  - f. Central Display Unit – Instrument Panel
  - g. Blade Deice Control Panel – Instrument Panel
  - h. Blade Deice Test Panel – Instrument Panel
  - i. Ice Rate Meter – Instrument Panel
  - j. Caution/Advisory Panel – Instrument Panel
  - k. ASN-43 Directional Gyro – Nose Compartment

- I. Stabilator System Test Panel – Nose Compartment
- m. Aviators Night Vision Imaging System Heads Up Display – Nose Compartment

c. Wire Strip and Retermination List Reference Document 1005471.

(1) Strip and reterminate as per Table 1.

Note: An upper case character preceded by an asterisk indicates a lower case character

Note: Consistent wiring faults have been discovered on older A/C. As a precaution, some existing A/C wiring will be replaced.

Note: Reterm from column "CONN" is the pin the wire will be removed from. The wire will NOT return to that pin.

**TABLE 1**  
**STRIP AND RETERMINATION**

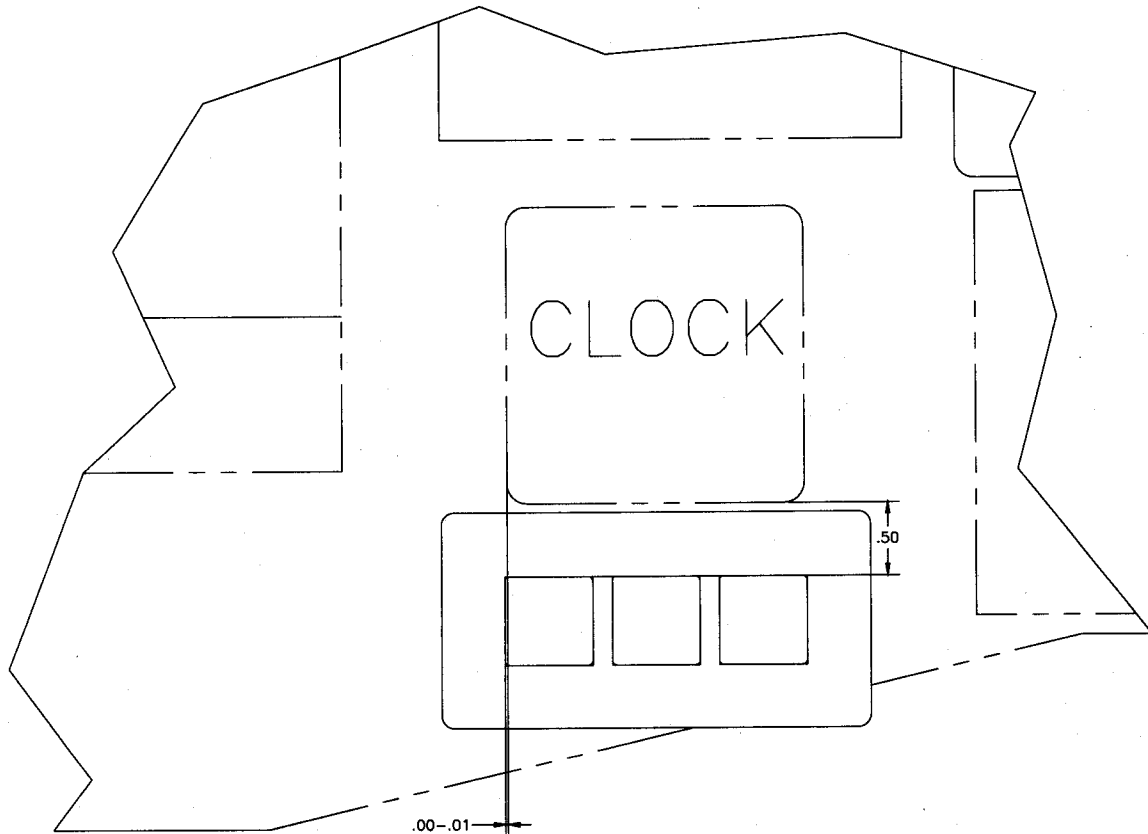
CABLE GROUP	WIRE NUMBER	MATERIAL	UNIT	CONN	LOCATION	NOMENCLATURE
Reterm From	L3931E24	Wire	P300R-J1	25	Copilot Instrument Pnl	Copilot HSI Mde Slt Pnl
Reterm To	L3931E24	Wire	SP007	Drawing 1005443	Copilot Instrument Pnl	Splice
Reterm From	ASN128-11D22	Wire	P696R	T	Nose Compartment	Signal Data Converter
Reterm To	ASN128-11D22	Wire	DGNS7-P1	28	Pilot Side Sta 185	DGNS Relay Panel Disc
Reterm From	ASN128-13E16	Wire	P696R	W	Nose Compartment	Signal Data Converter
Reterm To	ASN128-13E16	Wire	SP008	Drawing 1005443	Pilot Side Sta 185	Near DGNS Relay Panel
Strip	2F3755A24BLU	Wire	P305R	*B	Pilot Instrument Pnl	Pilot HIS
Strip	JMPR SP305-1	Wire	P305R	*C	Pilot Instrument Pnl	Pilot HIS
Strip	2F3777A24	Wire	P305R	*H	Pilot Instrument Pnl	Pilot HIS
Strip	2F3768A24	Wire	P305R	*W	Pilot Instrument Pnl	Pilot HIS
Strip	2F3769A24	Wire	P305R	*V	Pilot Instrument Pnl	Pilot HIS
Strip	2F3753A22BLU	Wire	P305R	*G	Pilot Instrument Pnl	Pilot HIS
Strip	2F3754B22WHT	Wire	P305R	*F	Pilot Instrument Pnl	Pilot HIS
Strip	2F3754A22WHT	Wire	P305R	*E	Pilot Instrument Pnl	Pilot HIS
Strip	2F3756A22BLU	Wire	P305R	*D	Pilot Instrument Pnl	Pilot HIS
Strip	2F3752A24BLU	Wire	P305R	*A	Pilot Instrument Pnl	Pilot HIS
Cap/Stow	2F3747A24BLU	Wire	P302R	*B	Copilot Instrument Pnl	Copilot HSI
Cap/Stow	JMPR 302R	Wire	P302R	*C	Copilot Instrument Pnl	Copilot HSI
Remove	1F3777A24	Wire	P302R	*H	Copilot Instrument Pnl	Copilot HSI
Strip	1F3768A24	Wire	P302R	*W	Copilot Instrument Pnl	Copilot HSI
Strip	1F3769A24	Wire	P302R	*V	Copilot Instrument Pnl	Copilot HSI
Cap/Stow	2F3752A24BLU	Wire	P302R	*A	Copilot Instrument Pnl	Copilot HSI
Remove	2F3749A22BLU	Wire	P302R	*D	Copilot Instrument Pnl	Copilot HSI
Remove	2F3750B22WHT	Wire	P302R	*E	Copilot Instrument Pnl	Copilot HSI
Remove	2F3750A22WHT	Wire	P302R	*F	Copilot Instrument Pnl	Copilot HSI
Remove	2F3751A22BLU	Wire	P302R	*G	Copilot Instrument Pnl	Copilot HSI
Remove	2F3752A24BLU	Wire	P317R	90	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl
Remove	2F3751A24BLU	Wire	P317R	98	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl
Remove	2F3749A24BLU	Wire	P317R	99	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl
Remove	2F3756A22WHT	Wire	P317R	74	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl
Remove	2F3753A22WHT	Wire	P317R	108	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl
Strip	2F3755A24BLU	Wire	P317R	73	Pilot Instrument Pnl	Pilot HSI Mde Slt Pnl

**TABLE 1**  
**STRIP AND RETERMINATION**

<b>CABLE GROUP</b>	<b>WIRE NUMBER</b>	<b>MATERIAL</b>	<b>UNIT</b>	<b>CONN</b>	<b>LOCATION</b>	<b>NOMENCLATURE</b>
Strip	JMPR SP305-1	Wire	-	SGR305-1	Pilot Instrument Pnl	Splice
Strip	2F3777A24	Wire	-	GG3-1	Pilot Instrument Pnl	Ground
Strip	2F3768A24	Wire	P317R	57	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Strip	2F3769A24	Wire	P317R	52	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	2F3747A24BLU	Wire	P317R	102	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Strip	JMPR 302R	Wire	-	SG302R-1	Pilot Instrument Pnl	Splice
Strip	JMPR P317R-3-24	Wire	P317R	100	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Remove	JMPR P317R-4-24	Wire	P317R	110	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	JMPR P317R-9-24	Wire	P317R	62	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Remove	JMPR P317R-10-24	Wire	P317R	86	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	2F3746A24BLU	Wire	P317R	61	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Strip	2F3777A24	Wire	P317R	72	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	ARN123-63B24BLU	Wire	P317R	85	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	ARN123-64B24WHT	Wire	P317R	109	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	ARN123-79B24WHT	Splice	P317R	109	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	ARN123-65B24BLU	Wire	P317R	97	Pilot Instrument Pnl	Pilot HSI Mde Slet Pnl
Cap/Stow	ARN123-63A24BLU	Wire	P149R	8	Pilot Kick Pnl Bay	VOR Receiver
Cap/Stow	ARN123-64A24WHT	Wire	P149R	33	Pilot Kick Pnl Bay	VOR Receiver
Cap/Stow	ARN123-79A24WHT	Wire	P149R	34	Pilot Kick Pnl Bay	VOR Receiver
Cap/Stow	ARN123-65A24BLU	Wire	P149R	36	Pilot Kick Pnl Bay	VOR Receiver
Strip	-	Wire	-	GG33-2	Copilot Instrument Pnl	Ground
Strip	1F3768A24	Wire	P300R	57	Copilot Instrument Pnl	Copilot HSI Mde Slet Pnl
Strip	1F3769A24	Wire	P300R	52	Copilot Instrument Pnl	Copilot HSI Mde Slet Pnl
Strip	1F3777A24	Wire	P300R	72	Copilot Instrument Pnl	Copilot HSI Mde Slet Pnl
Strip	Pin Filter Adapter	9842 21-900423-018	P695R-J1	-	Nose Compartment	Signal Data Converter
Strip	Pin Filter Adapter	9718 21-900423-078	P695R-J2	-	Nose Compartment	Signal Data Converter
Strip	Pin Filter Adapter	9840 21-900423-014	P695R-J3	-	Nose Compartment	Signal Data Converter

d. Cockpit Instrument Panel Installation. Reference Drawing 1005436. Reference Figures 1 through 5.

- (1) Locate the clock (pn ABU-11/A) on the pilot's instrument panel.
- (2) Mark a vertical line 0.00 inches from the inboard edge of the pilot side clock (pn ABU-11/A).
- (3) Mark a horizontal line 0.50 inches down from the bottom edge of the pilot side clock (pn ABU-11/A).
- (4) Obtain one (1) template (pn 1005439-05).
- (5) Orient template (pn 1005439-05) so the template annunciator cutouts are aligned horizontally. Align the cutouts in the template along the vertical and horizontal marks made below the clock (pn ABU-11/A) on the pilot instrument panel in step d(2) and step d(3). Align the left edge of the inboard template annunciator cutout with the vertical mark and the top edge of all three (3) template annunciator cutouts with the horizontal mark. See Figure 1.



**Figure 1. Annunciator template on pilot side instrument panel**

- (6) Using the template (pn 1005439-05), mark the pilot instrument panel along the periphery of the three (3) template annunciator cutouts.
- (7) Check to make sure the template marking dimensions are correct and within the proper tolerance of 0.696 inches  $+0.010/-0.000$  inches square and the corner radii are 0.031 inches  $\pm 0.010$  inches.
- (8) Protect area forward, aft, and around marked cutout areas with suitable barrier paper and tape.
- (9) Using an #30 drill bit, chain drill the inside perimeter of template cutout. File inside edges to template dimensions. Ensure all shavings are retained, removed, and discarded during drilling.
- (10) Using a metal file, file remaining amount of instrument panel material to the edge of the template marking. Ensure all shavings are retained, removed, and discarded during filing.
- (11) Check to make sure the hole size is within the proper tolerance of 0.696 inches  $+0.010/-0.000$  inches square and the corner radii are 0.031 inches  $\pm 0.010$  inches. Use a file as required to properly size the hole. Remove all burrs and sharp edges equivalent to a radius of 0.010 inches. Ensure all shavings are retained, removed, and discarded during filing. See Figure 2.

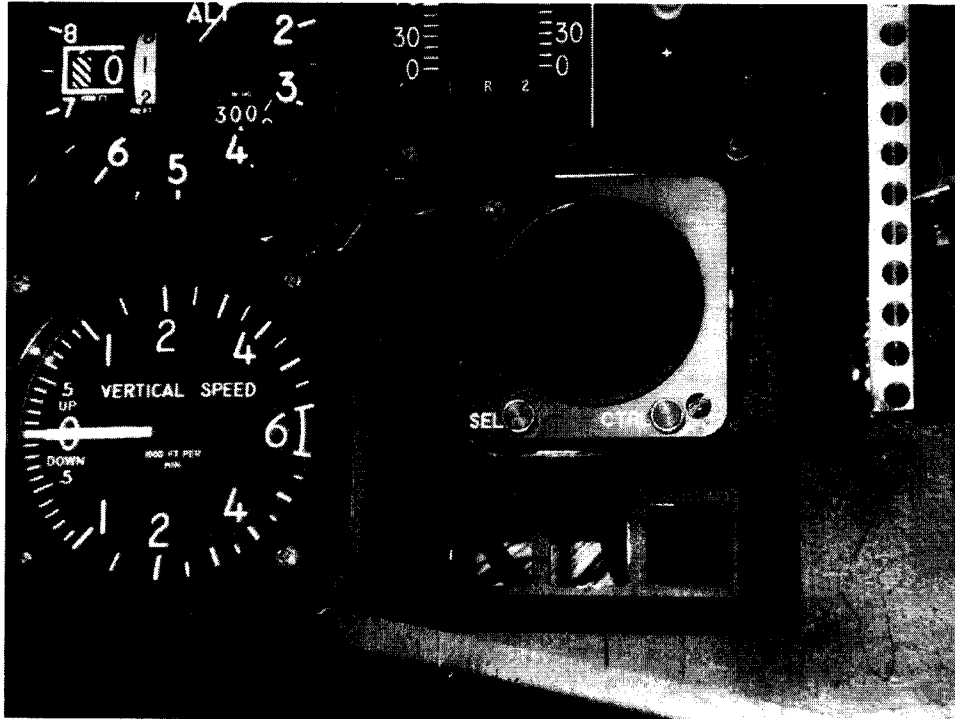


Figure 2. Hole cutout under clock on copilot side of instrument panel

- (12) Obtain one annunciator (pn LED-40-18-KG-31938).
- (13) Perform a fit check of the annunciator into the new annunciator hole. Properly size hole with a metal file as required for proper fit. Remove all burrs and sharp edges equivalent to a radius of 0.010 inches. Ensure all shavings are retained, removed, and discarded during filing.
- (14) Repeat step d(7) through step d(13) for remaining two (2) annunciator markings. Check to make sure the template marking dimensions and cutouts are correct and within the proper tolerance of  $0.154 \pm 0.010$  inches between each hole on the instrument panel.
- (15) Locate the clock (pn ABU-11/A) on the co-pilot's instrument panel.
- (16) Mark a vertical line 0.00 inches from the outboard edge of the co-pilot side clock (pn ABU-11/A).
- (17) Mark a horizontal line 0.50 inches down from the bottom edge of the co-pilot side clock (pn ABU-11/A).
- (18) Obtain one (1) template (pn 1005439-05).
- (19) Orient template (pn 1005439-05) so the template annunciator cutouts are aligned horizontally. Align the cutouts in the template along the vertical and horizontal marks made below the clock (pn ABU-11/A) on the co-pilot instrument panel in step d(15) and step d(16). Align the left edge of the outboard template annunciator cutout with the vertical mark and the top edge of all three (3) template annunciator cutouts with the horizontal mark. See Figure 3.

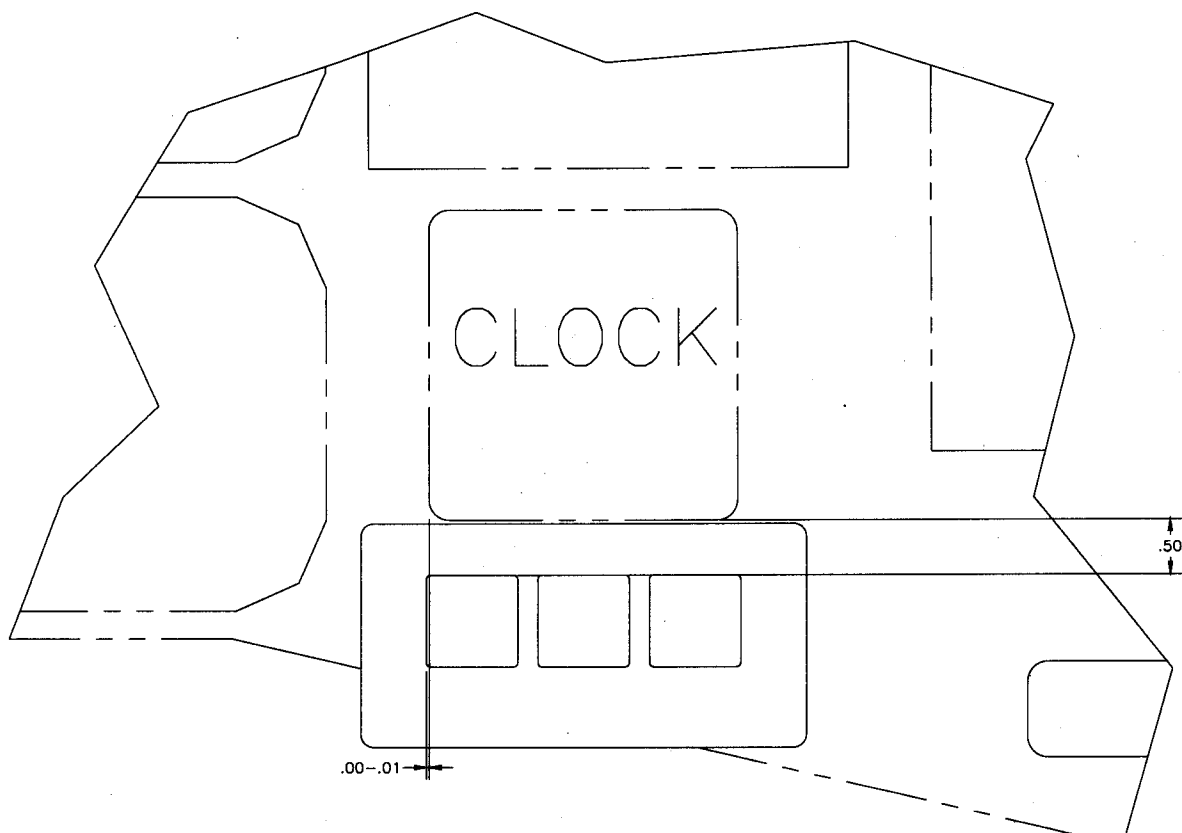


Figure 3. Annunciator template on copilot side instrument panel

- (20) Repeat step d(6) through d(14).
- (21) Properly dispose of template (pn 1005439-05) locally.
- (22) Burnish area around the annunciator cutouts on the forward side of the instrument panel to match the size of the annunciator mounting sleeves provided with the annunciator for proper grounding between annunciators and instrument panel. Prepare areas in accordance with SAE-ARP 1870 Paragraph 5.1.

**WARNING**

**Acetone is combustible and toxic. It can irritate skin. Use only with adequate ventilation. In case of contact, immediately flush skin or eyes with clean water. Get medical attention for eyes.**

- (23) Clean all holes using Acetone or equivalent.

**WARNING**

**Chemical film is extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (24) Touch up all holes using Alodine 1201 per MIL-C-5541 Class 1A, Form 3, Method B.
- (25) Properly mask the forward side of the instrument panel burnished for proper grounding between the instrument panel and the annunciators using masking tape.

**WARNING**

**Primer is flammable and extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (26) Touch up exposed unmasked annunciator hole bare metal surfaces with one coat of Primer (MIL-PRF-23377, Type I, Class C). Do not paint until primer has properly dried.

**WARNING**

**Urethane paint is flammable and extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (27) Paint two coats of Urethane (MIL-PRF-85285, Type I, Color 37038 (Black) per FED-STD-595) over primed surfaces. Allow paint to properly dry before applying second coat or proceeding to step 27.
- (28) Remove masking tape from forward side of instrument panel.

**WARNING**

**Acetone is combustible and toxic. It can irritate skin. Use only with adequate ventilation. In case of contact, immediately flush skin or eyes with clean water. Get medical attention for eyes.**

- (29) Clean masked area on the forward side of the instrument panel using Acetone or equivalent leaving a clean dry surface for decal installation on the instrument panel.
- (30) Obtain and align decal (pn 1005441-07) under the middle of the left hand most annunciator hole below the co-pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.
- (31) Obtain and align decal (pn 1005441-09) under the middle of the center annunciator hole below the co-pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.
- (32) Obtain and align decal (pn 1005441-11) under the middle of the right hand most annunciator hole below the co-pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.

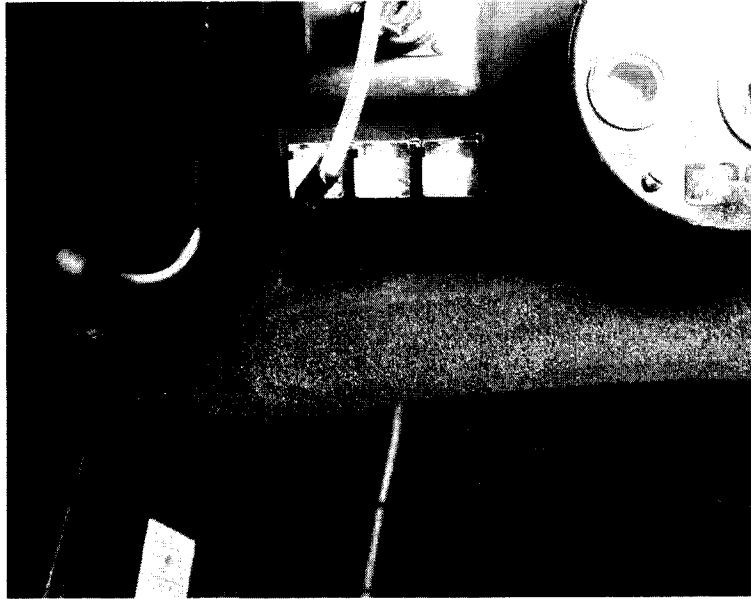


Figure 4. Copilot side decal installation

- (33) Obtain and align decal (pn 1005441-01) under the middle of the left hand most annunciator hole below the pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.
- (34) Obtain and align decal (pn 1005441-03) under the middle of the center annunciator hole below the pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.
- (35) Obtain and align decal (pn 1005441-05) under the middle of the right hand most annunciator hole below the pilot side clock (pn ABU-11/A). Remove the paper backing from decal and adhere to the back side of the instrument panel. Trim decal as required for proper fit. Edge sealer may be applied. Reference Figure 4.
- (36) Install annunciator (pn LED-40-18-KG-31938) in the left hand most annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.
- (37) Install annunciator (pn LED-40-18-KG-31936) in the center annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.
- (38) Install annunciator (pn LED-40-18-KG-31937) in the right hand most annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.
- (39) Install annunciator (pn LED-40-18-KG-31938) in the left hand most annunciator hole below the co-pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.
- (40) Install annunciator (pn LED-40-18-KG-31936) in the center annunciator hole below the co-pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.
- (41) Install annunciator (pn LED-40-18-KG-31937) in the right hand most annunciator hole below the co-pilot side clock (pn ABU-11/A) on the instrument panel using the mounting sleeve provided and secured per manufacturer's instruction. Reference Figure 5.

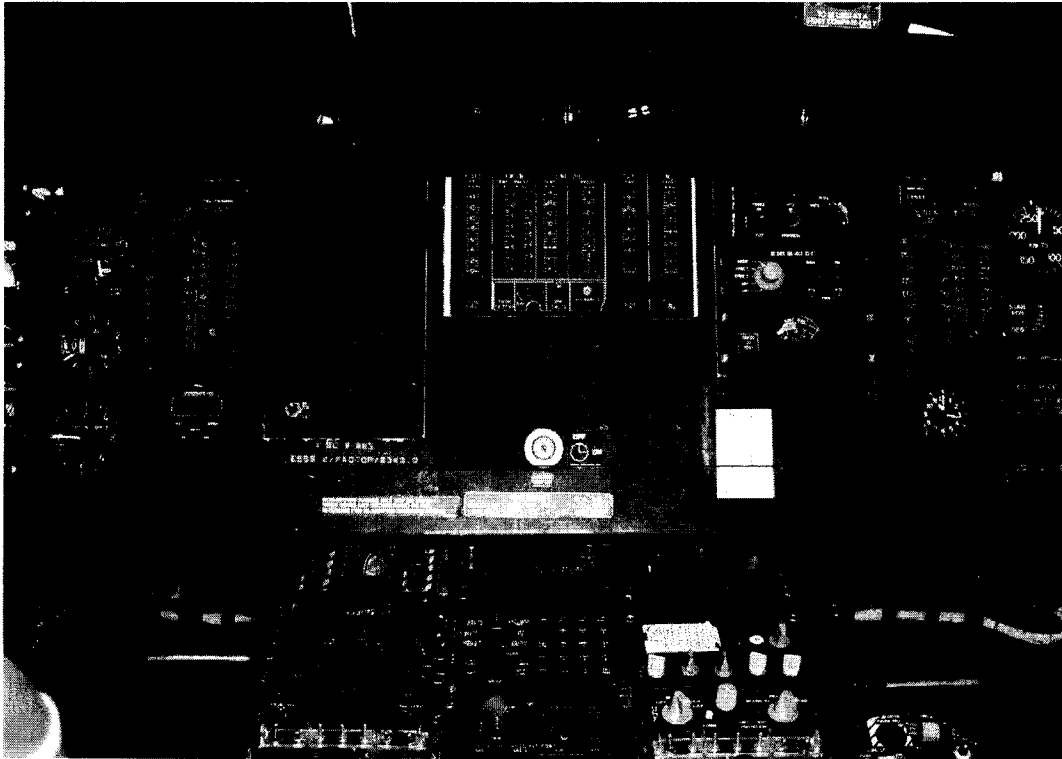


Figure 5. Annunciator installation

- e. Relay Bracket Assembly Installation. Reference Drawing 1005437. Reference Figures 1 through 9. **Refer to Appendix A** for parts list of Pilot Relay Bracket Assembly (pn 1005477-10) and Copilot Relay Bracket Assembly (pn 1005478-10).
- (1) Obtain one (1) clip assembly (pn 1005439-10) and orient clip assembly so the mounting legs are oriented up and down.
  - (3) Mark a vertical line 0.25 inches down from the top edge of the top leg of the clip assembly (pn 1005439-10).
  - (4) Mark a horizontal line 0.25 inches from the right edge of the top leg of the clip assembly (pn 1005439-10).
  - (4) Mark a second horizontal line 0.50 inches left from the first horizontal line marked in step e(3) on the top leg of the clip assembly (pn 1005439-10).
  - (5) Mark a vertical line 0.25 inches up from the bottom edge of the bottom leg of the clip assembly (pn 1005439-10).
  - (6) Mark a horizontal line 0.25 inches from the right edge of the bottom leg of the clip assembly (pn 1005439-10).
  - (7) Mark a second horizontal line 0.50 inches left from the first horizontal line marked in step e(6) on the bottom leg of the clip assembly (pn 1005439-10).
  - (8) Clamp down clip assembly (pn 1005439-10) marked with lines on both mounting legs for the purposes of drilling.

- (9) Drill four (4) 0.094 inch pilot holes using a 3/32 drill bit at the vertical and horizontal line marking intersections on the top and bottom legs of the clip assembly (pn 1005439-10). Remove clip assembly from clamp. Ensure all shavings are retained, removed, and discarded during drilling.
- (10) Perform steps e(1) through e(9) on a total of seven (7) clip assembly (pn 1005439-10).
- (11) Obtain one (1) shim (pn 1005439-03) and one (1) clip assembly (pn 1005439-10), predrilled with four (4) pilot holes. Align the outline of the shim on to the outline of the clip assembly so the legs of the clip assembly are resting on the shim for purposes of match drilling the four (4) pilot holes from the clip assembly to the shim.
- (12) Using a clamp, secure one (1) clip assembly (pn 1005439-10) and one (1) shim (pn 1005439-03) down for the purposes of match drilling.
- (13) Match drill one (1) 0.094 inch pilot hole using a 3/32 drill bit from one (1) of the existing pilot holes on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Install a Cleco in the pilot hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (14) Match drill a second 0.094 inch pilot hole using a 3/32 drill bit from an existing pilot hole on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Install a Cleco in the pilot hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (15) Match drill a third 0.094 inch pilot hole using a 3/32 drill bit from an existing pilot hole on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Install a Cleco in the pilot hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (16) Match drill a fourth 0.094 inch pilot hole using a 3/32 drill bit from the last existing pilot hole on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Ensure all shavings are retained, removed, and discarded during drilling.
- (17) Perform steps e(11) through e(16) on a total of three (3) shim (pn 1005439-03) with three (3) clip assembly (pn 1005439-10) containing four (4) pilot holes.
- (18) Obtain one (1) unmodified clip assembly (pn 1005439-10) and orient clip assembly so the mounting legs are oriented up and down.
- (19) Mark a vertical line 0.25 inches down from the top edge of the top leg of the clip assembly (pn 1005439-10).
- (20) Mark a horizontal line 0.25 inches from the right edge of the top leg of the clip assembly (pn 1005439-10).
- (21) Mark a second horizontal line 0.50 inches left from the first horizontal line marked in step e(20) on the top leg of the clip assembly (pn 1005439-10).
- (22) Secure the clip assembly (pn 1005439-10) down for the purposes of drilling.
- (23) Drill two (2) 0.094 inch pilot holes using a 3/32 drill bit at the vertical and horizontal line marking intersections on the top leg of the clip assembly (pn 1005439-10). Remove clip assembly from clamp. Ensure all shavings are retained, removed, and discarded during drilling.
- (24) Obtain clip assembly (pn 1005439-10) with two (2) pilot holes modified in step e(23) and one (1) unmodified shim (pn 1005439-03).
- (25) Align shim (pn 1005439-03) with clip assembly (pn 1005439-10) so the outline of the clip assembly is aligned with the outline of the shim and the legs of the clip assembly are resting on the shim for purposes of match drilling pilot holes on the clip assembly to the shim.
- (26) Using a clamp, secure clip assembly (pn 1005439-10) and shim (pn 1005439-03) down for the purposes of match drilling.

- (27) Match drill one (1) 0.094 inch pilot hole using a 3/32 drill bit from one (1) of the existing pilot holes on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Install a Cleco in the pilot hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (28) Match drill a second 0.094 inch pilot hole using a 3/32 drill bit from an existing pilot hole on the clip assembly (pn 1005439-10) to the shim (pn 1005439-03). Ensure all shavings are retained, removed, and discarded during drilling.
- (29) Cut one shim (pn 1005439-03) approximately 1" x 3/4" after determining proper fit.
- (30) Locate bulkhead between cockpit and Nose Compartment on the pilot's side of the aircraft forward of the pilot side foot pedals. Reference Figure 1.
- (31) Mark a horizontal line 0.20 inches down from the bottom edge of the top structural angle secured to the bulkhead (FS 184.8, WL 226.1). Reference Figure 1.
- (32) Mark a vertical line 4.72 inches from the right edge of the bulkhead (FS 184.8, RBL 22.7). Reference Figure 1.

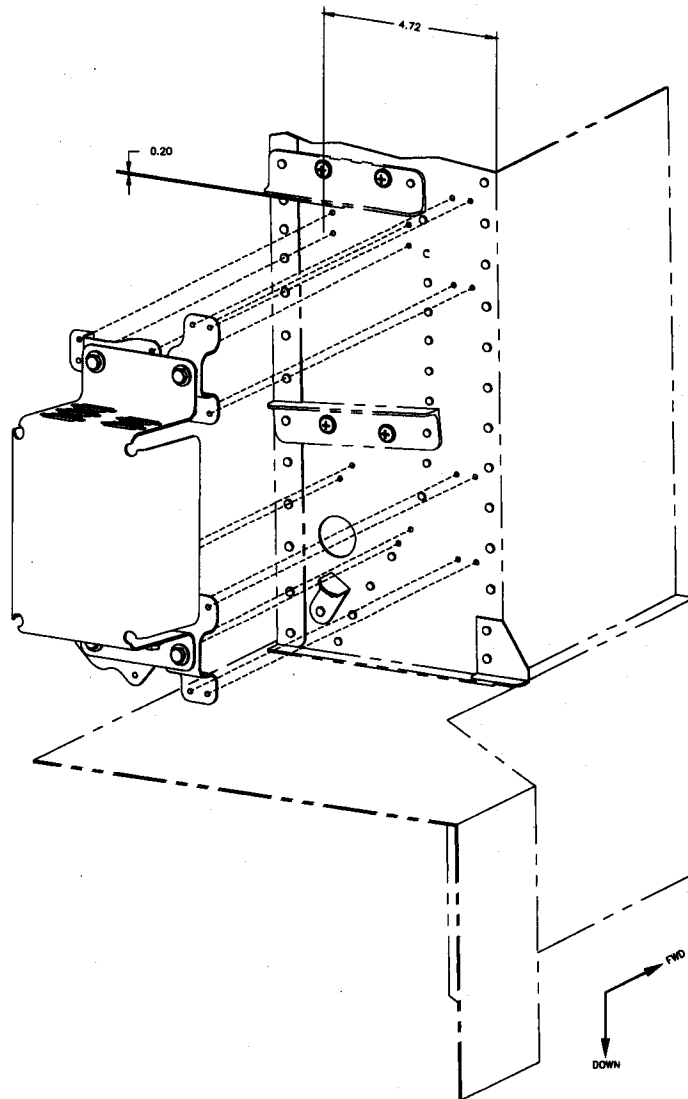


Figure 1. Pilot side relay bracket installation

- (33) Obtain one (1) Relay Bracket Assembly (pn 1005477-10) so the mounting legs are oriented up and down and the relay mounting holes are on the top of the mounting bracket, one (1) clip assembly (pn 1005439-10) with four (4) pilot holes and orient clip assembly so the predrilled mounting legs are oriented left and right, and four (4) machine screw (pn NAS1801-3-8). Reference Figure 1.
- (34) Attach clip assembly (pn 1005439-10) to top left mounting hole in Relay Bracket Assembly (pn 1005477-10) using one (1) machine screw (pn NAS1801-3-8).
- (35) Obtain two (2) clip assembly (pn 1005439-10) with four (4) pilot holes and orient clip assembly so the predrilled mounting legs are oriented up and down.
- (36) Attach two (2) clip assembly (pn 1005439-10) to top and bottom right mounting holes in Relay Bracket Assembly (pn 1005477-10) obtained in step e(33) using two (2) machine screw (pn NAS1801-3-8).
- (37) Obtain one (1) clip assembly (pn 1005439-10) with only 2 pilot holes.
- (38) Attach clip assembly (pn 1005439-10) with two pilot holes to the bottom left mounting hole in Relay Bracket Assembly (pn 1005477-10) using one (1) machine screw (pn NAS1801-3-8). Orient clip assembly at a 47° angle from a vertical position so the two (2) pre drilled holes are located upwards and left.
- (39) Align the left edge of the top left clip assembly (pn 1005439-10) to the vertical line located 4.72 inches from the right edge of the bulkhead (FS 184.8, RBL 22.7) and align the top of the top left clip assembly to the horizontal line located 0.20 inches from the bottom edge of the top structural angle secured to the bulkhead (FS 184.8, WL 225.7).
- (40) Mark the bulkhead from the twelve (12) pilot holes located on the top left, top right, and bottom right clip assembly (pn 1005439-10) mounting legs. See Figure 1.
- (41) Check if bottom leg of the bottom left clip assembly (pn 1005439-10) is located over an existing rivet from the row of existing rivets on the firewall.
- (42) If bottom left clip assembly (pn 1005439-10) bottom mounting leg does not sit over an existing rivet, then perform steps e(44), e(45), e(46), e(48), and skip to step e(51).
- (43) If clip assembly (pn 1005439-10) bottom mounting leg does sit over an existing rivet or tooling hole, check to see if the location of the rivet is greater than 0.25 inches away from the side and bottom edges of the clip assembly. Rotate clip assembly (pn 1005439-10) on Relay Bracket Assembly (pn 1005477-10) deviating from the 47° angle as required in order to align the existing rivet or tooling hole more than 0.25 inches away from the side and bottom edges of the clip assembly.
- (44) Mark the bulkhead from the two (2) pilot holes located on the bottom left clip assembly (pn 1005439-10) top mounting legs.
- (45) Remove Relay Bracket Assembly (pn 1005477-10) attached to four (4) clip assembly (pn 1005439-10) from bulkhead.
- (46) Drill fourteen (14) 0.094 inch pilot holes using a 3/32 drill bit at the fourteen (14) pilot hole markings on the bulkhead.
- (47) Remove the existing rivet from step e(43) from the bulkhead by drilling out the center of the rivet using the appropriate size drill bit. Do not oversize existing hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (48) Realign bottom left clip assembly (pn 1005439-10) attached to Relay Bracket Assembly (pn 1005477-10) over the two (2) bottom inboard pilot holes on the bulkhead.
- (49) Mark the clip assembly (pn 1005439-10) from the removed rivet existing hole.

- (50) Locate and mark the location of the second pilot hole more than 0.50 inches down from the location of the removed existing rivet and 0.25 inches from the bottom edge of the clip assembly (pn 1005439-10) bottom mounting leg onto the clip assembly and bulkhead.
- (51) Drill the two (2) 0.094 inch remaining pilot holes on the bottom mounting leg of the bottom left clip assembly (pn 1005439-10) and bulkhead using a 3/32 drill bit. Ensure all shavings are retained, removed, and discarded during drilling.
- (52) Remove Relay Bracket Assembly (pn 1005477-10) attached to four (4) clip assembly (pn 1005439-10) from bulkhead.
- (53) Remove four (4) clip assembly (pn 1005439-10) from Relay Bracket Assembly (pn 1005477-10). Retain four (4) machine screw (pn NAS1801-3-8) for reinstallation.
- (54) Obtain shim (pn 1005439-03) with two (2) predrilled pilot holes and cut bottom half and one (1) shim (pn 1005439-03) with four (4) predrilled pilot holes.
- (55) Align four (4) clip assembly (pn 1005439-10) mounting leg pilot holes over the bulkhead pilot holes.
- (56) Align shim (pn 1005439-03) with two (2) predrilled pilot holes and cut shim approximately 1" X ¾" to properly fit over the two (2) pilot holes corresponding to the top leg of the bottom right clip assembly (pn 1005439-10) pilot holes on the forward side of the bulkhead.
- (57) Align shim (pn 1005439-03) with four (4) predrilled pilot holes over the four (4) pilot holes corresponding to the top left clip assembly (pn 1005439-10) pilot holes on the forward side of the bulkhead. See Figure 2.

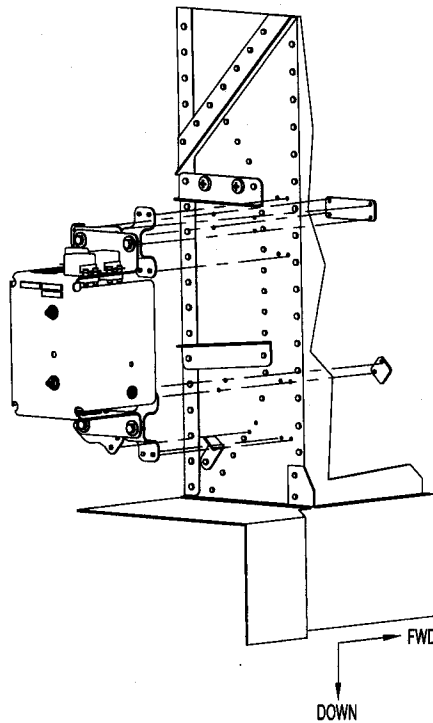


Figure 2. Pilot side relay bracket and shim installation

- (58) Use sixteen (16) Clecos to secure four (4) clip assembly (pn 1005439-10) and two (2) shim (pn 1005439-03) to the bulkhead.

- (59) Ream through the sixteen (16) pilot holes in the clip assembly (pn 1005439-10), shim (pn 1005439-03), and bulkhead between 0.129 inches and 0.132 inches using a #30 drill bit by removing and replacing one Cleco for each hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (60) Countersink the six (6) reamed holes on the two (2) shim (pn 1005439-03) between 0.222 inches and 0.228 inches at a 100° countersink slope on the forward side of the two (2) shims. Ensure all shavings are retained, removed, and discarded during drilling.
- (61) Mark the silhouette of the faying surface between the four (4) clip assembly (pn 1005439-10) mounting legs and the bulkhead.
- (62) Remove the four (4) clip assembly (pn 1005439-10) and two (2) shim (pn 1005439-03) from the bulkhead by removing the Clecos.
- (63) Remove all burrs and sharp edges equivalent to a radius of 0.010 inches on all drilled holes on the clip assembly (pn 1005439-10), shim (pn 1005439-03) (when applicable), and bulkhead. Ensure all shavings are retained, removed, and discarded during deburring.
- (64) Burnish the area outlining the faying surfaces between the bulkhead and the four (4) clip assembly (pn 1005439-10) for proper grounding. Size of the burnished area is to match the size of the faying surface between the clip assembly mounting legs and the bulkhead. Prepare area in accordance with SAE-ARP 1870 Paragraph 5.1.

**WARNING**

**Chemical film is extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (65) Touch up burnished area and holes on the four (4) clip assembly (pn 1005439-10) and holes on two (2) shim (pn 1005439-03) using Alodine 1201 per MIL-C-5541 Class 1A, Form 3, Method B.
- (66) Align top right clip assembly (pn 1005439-10) over corresponding top right mounting holes on the bulkhead. Use three (3) Clecos to secure clip assembly to the bulkhead leaving open one (1) mounting hole.
- (67) Use grip gauge to verify proper rivet grip.
- (68) Obtain one (1) Cherrymax rivet (pn CR3213-4-02) and insert into the clip assembly (pn 1005439-10) mounting hole and bulkhead. Install Cherrymax rivet per manufacturer's instruction using appropriate riveting tool.
- (69) Remove Cleco from the next hole repeat steps e(68).
- (70) Repeat steps e(66) through e(69) for the bottom right clip assembly (pn 1005439-10).
- (71) Align top left clip assembly (pn 1005439-10) over corresponding top left mounting holes on the bulkhead and shim (pn 1005439-03) with four (4) mounting holes over the corresponding top left mounting holes on the bulkhead on the forward side of the bulkhead. Use three (3) Clecos to secure clip assembly and shim to the bulkhead leaving open one (1) mounting hole.
- (72) Use grip gauge to verify proper rivet grip.
- (73) Obtain one (1) Cherrymax rivet (pn CR3212-4-03) and insert into the shim (pn 1005439-03) countersunk mounting hole into the bulkhead and clip assembly (pn 1005439-10). Install Cherrymax rivet per manufacturer's instruction using appropriate riveting tool.

- (74) Remove Cleco from the next hole repeat steps e(73).
- (75) Repeat steps e(71) through e(74) for the bottom left clip assembly (pn 1005439-10) and shim (pn 1005439-03) with two (2) mounting holes. See Figure 3, and Figure 4.

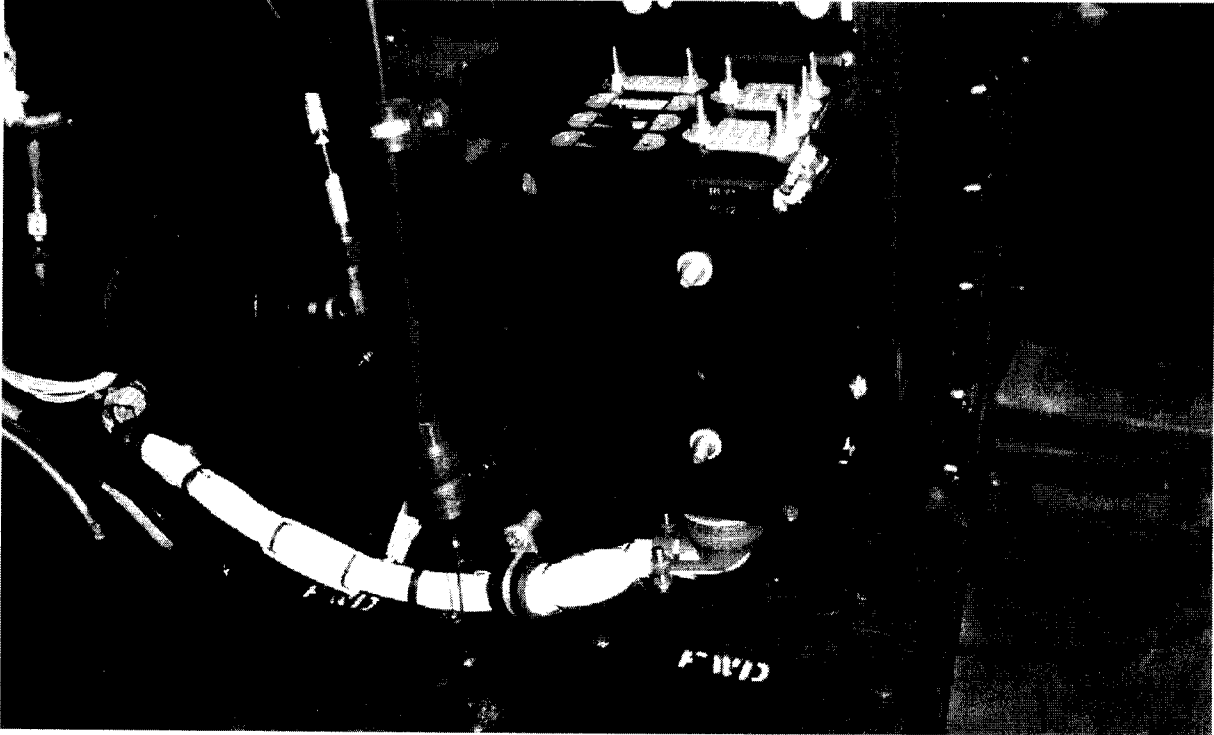
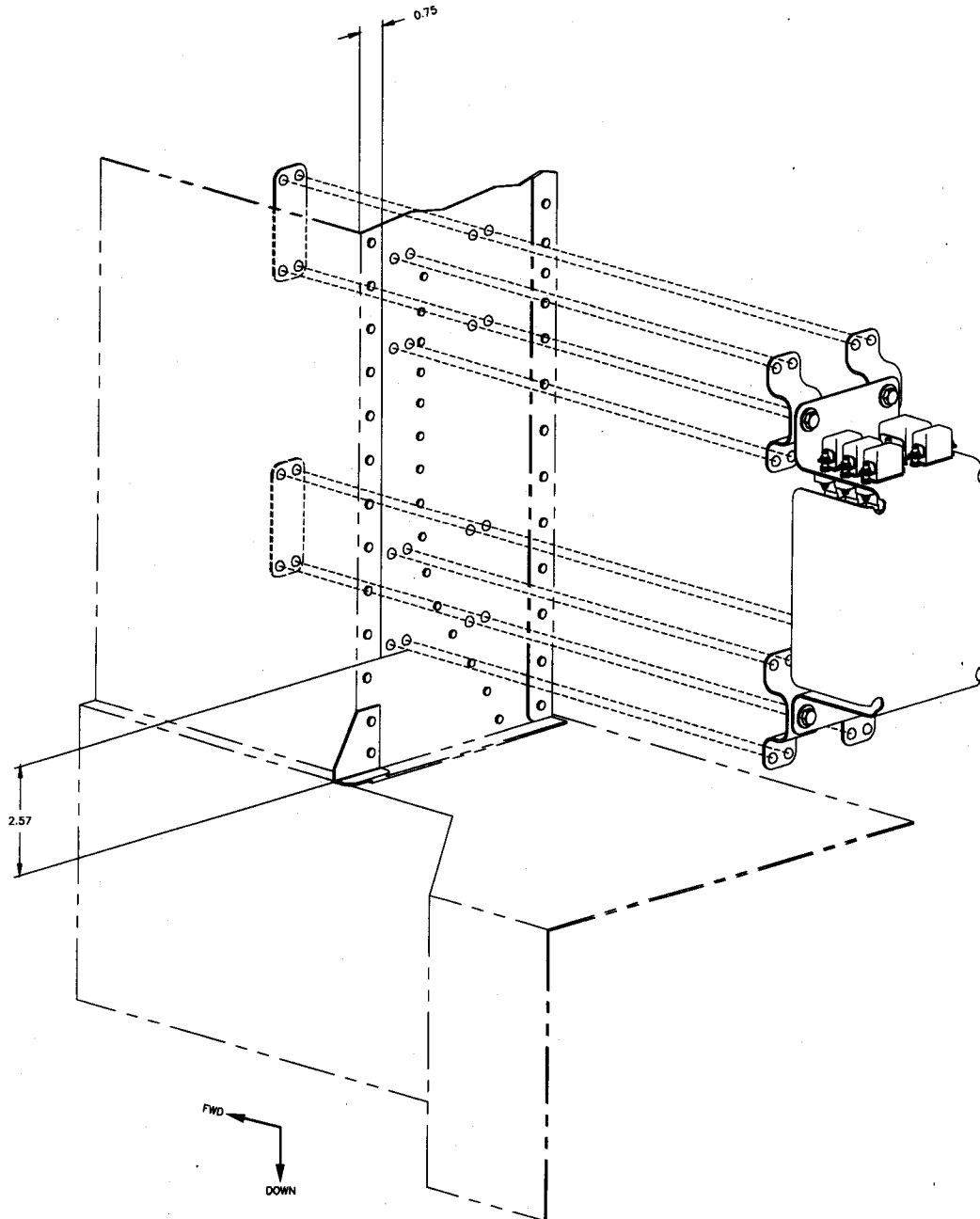


Figure 3. Pilot side relay bracket installation

- (76) Align Relay Bracket Assembly (pn 1005478-10) mounting holes over the installed clip assemblies (pn 1005439-10) on the bulkhead in the copilot's side of the aircraft forward of the copilot side foot pedals.
- (77) Secure Relay Bracket Assembly (pn 1005478-10) to installed clip assemblies (pn 1005439-10) nutplates using four (4) machine screws (pn NAS1801-3-8), and four (4) flat washers (pn NAS1149D0332J). See Figure 3.
- (78) Locate bulkhead between cockpit and Nose Compartment on the co-pilot's side of the aircraft forward of the co-pilot side foot pedals at FS 184.8, WL 215, and LBL 27.
- (79) Mark a vertical line 0.75 inches inboard from the left edge of the bulkhead (FS 184.8, LBL 27).
- (80) Mark a horizontal line 2.57 inches up from the cockpit floor (FS 184.8, WL 213.7).
- (81) Obtain one (1) Relay Bracket Assembly (pn 1005478-10) so the mounting legs are oriented up and down and the relay mounting holes are on the top of the mounting bracket, remaining four (4) clip assembly (pn 1005439-10) with four (4) pilot holes with mounting legs oriented up and down, and four (4) machine screw (pn NAS1801-3-8).
- (82) Attach four (4) clip assembly (pn 1005439-10) to the Relay Bracket Assembly (pn 1005478-10) mounting holes using four (4) machine screw (pn NAS1801-3-8).

- (83) Align the left edge of the bottom left clip assembly (pn 1005439-10) to the vertical line located 0.75 inches from the left edge of the bulkhead (FS 184.8, LBL 27) and align the bottom edge of the bottom left clip assembly to the horizontal line located 2.57 inches up from the cockpit floor (FS 184.8, WL 213.7).
- (84) Mark the bulkhead from the sixteen (16) pilot holes located on the four (4) clip assembly (pn 1005439-10) mounting legs. See Figure 4.



**Figure 4. Copilot Relay Bracket Assembly and shim installation**

- (85) Remove Relay Bracket Assembly (pn 1005478-10) attached to four (4) clip assembly (pn 1005439-10) from bulkhead.

- (86) If an ADF ARN-147 is installed, remove grounding screws and cable clamp from firewall.
- (87) Drill sixteen (16) 0.094 inch pilot holes using a 3/32 drill bit at the sixteen (16) pilot hole markings on the bulkhead.
- (88) Remove four (4) clip assembly (pn 1005439-10) from Relay Bracket Assembly (pn 1005478-10). Retain four (4) machine screw (pn NAS1801-3-8) for reinstallation.
- (89) Obtain remaining two (2) shim (pn 1005439-03) with four (4) predrilled pilot holes.
- (90) Align four (4) clip assembly (pn 1005439-10) mounting leg pilot holes over the bulkhead pilot holes.
- (91) Align one (1) shim (pn 1005439-03) with four (4) predrilled pilot holes over the four (4) pilot holes corresponding to the top right clip assembly (pn 1005439-10) pilot holes on the forward side of the bulkhead.
- (92) Align one (1) shim (pn 1005439-03) with four (4) predrilled pilot holes over the four (4) pilot holes corresponding to the bottom right clip assembly (pn 1005439-10) pilot holes on the forward side of the bulkhead. Trim bottom outboard area of shim as necessary so shim does not interfere with bulkhead panel mounting lip. See Figure 5.

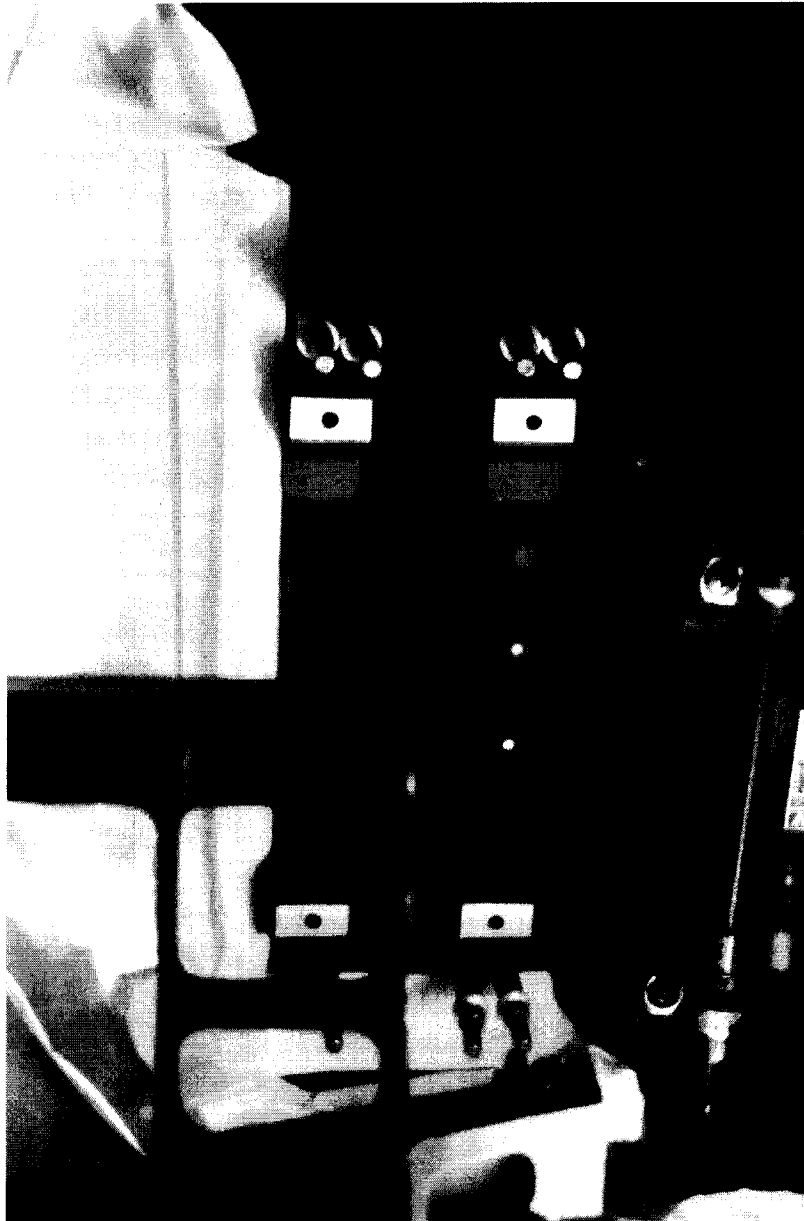


Figure 5. Copilot side mounting clip assembly located on bulkhead

- (93) Use sixteen (16) Clecos to secure four (4) clip assembly (pn 1005439-10) and two (2) shim (pn 1005439-03) to the bulkhead.
- (94) Ream through the sixteen (16) pilot holes in the clip assembly (pn 1005439-10), shim (pn 1005439-03), and bulkhead between 0.129 inches and 0.132 inches using a #30 drill bit by removing and replacing one Cleco for each hole. Ensure all shavings are retained, removed, and discarded during drilling.
- (95) Countersink the eight (8) reamed holes on the two (2) shim (pn 1005439-03) between 0.222 inches and 0.228 inches at a 100° countersink slope on the forward side of the two (2) shims. Ensure all shavings are retained, removed, and discarded during drilling.
- (96) Mark the silhouette of the faying surface between the four (4) clip assembly (pn 1005439-10) mounting legs and the bulkhead.

- (97) Remove the four (4) clip assembly (pn 1005439-10) and two (2) shim (pn 1005439-03) from the bulkhead by removing the Clecos.
- (98) Remove all burrs and sharp edges equivalent to a radius of 0.010 inches on all drilled holes on the clip assembly (pn 1005439-10), shim (pn 1005439-03) (when applicable), and bulkhead. Ensure all shavings are retained, removed, and discarded during deburring.
- (99) Burnish the area outlining the faying surfaces between the bulkhead and the four (4) clip assembly (pn 1005439-10) for proper grounding. Size of the burnished area is to match the size of the faying surface between the clip assembly mounting legs and the bulkhead. Prepare area in accordance with SAE-ARP 1870 Paragraph 5.1.

**WARNING**

**Chemical film is extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (100) Touch up burnished area and holes on the four (4) clip assembly (pn 1005439-10) and holes on two (2) shim (pn 1005439-03) using Alodine 1201 per MIL-C-5541 Class 1A, Form 3, Method B.
- (101) Align top left clip assembly (pn 1005439-10) over corresponding top left mounting holes on the bulkhead. Use three (3) Clecos to secure clip assembly to the bulkhead leaving open one (1) mounting hole.
- (102) Use grip gauge to verify proper rivet grip.
- (103) Obtain one (1) Cherrymax rivet (pn CR3213-4-02) and insert into the clip assembly (pn 1005439-10) mounting hole and bulkhead. Install Cherrymax rivet per manufacturer's instruction using appropriate riveting tool.
- (104) Remove Cleco from the next hole repeat steps e(103).
- (105) Repeat steps e(101) through e(104) for the bottom left clip assembly (pn 1005439-10).
- (106) Align top right clip assembly (pn 1005439-10) over corresponding top right mounting holes on the bulkhead and shim (pn 1005439-03) with four (4) mounting holes over the corresponding top right mounting holes on the bulkhead on the forward side of the bulkhead. Use three (3) Clecos to secure clip assembly and shim to the bulkhead leaving open one (1) mounting hole.
- (107) Use grip gauge to verify proper rivet grip.
- (108) Obtain one (1) Cherrymax rivet (pn CR3212-4-03) and insert into the shim (pn 1005439-03) countersunk mounting hole into the bulkhead and clip assembly (pn 1005439-10). Install Cherrymax rivet per manufacturer's instruction using appropriate riveting tool.
- (109) Remove Cleco from the next hole repeat steps e(107).
- (110) Repeat steps e(106) through e(109) for the bottom right clip assembly (pn 1005439-10) and shim (pn 1005439-03). See Figure 6, and Figure 7.



Figure 6. Copilot side mounting clip assembly installation

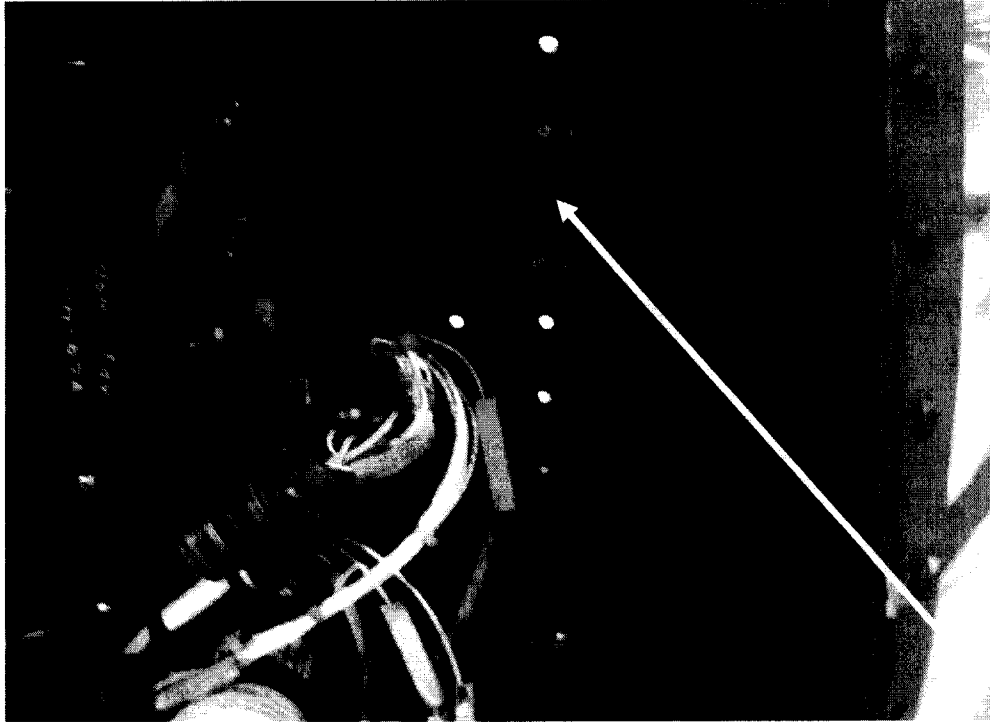


Figure 7. Copilot side shim installation

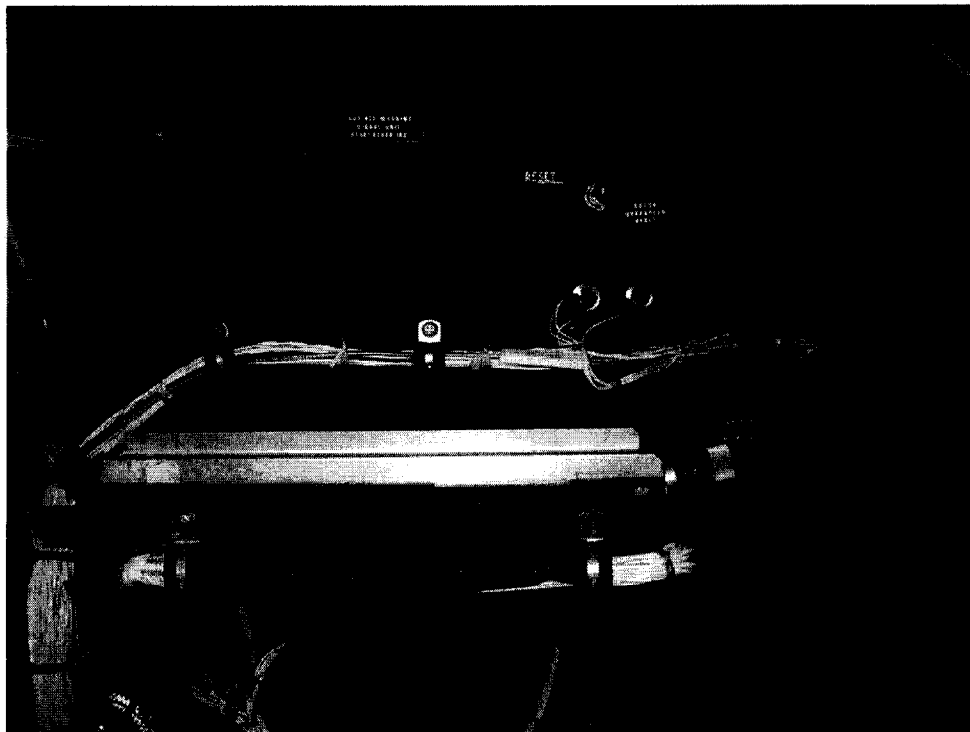


Figure 8. ADF ARN-147 Grounding Screws

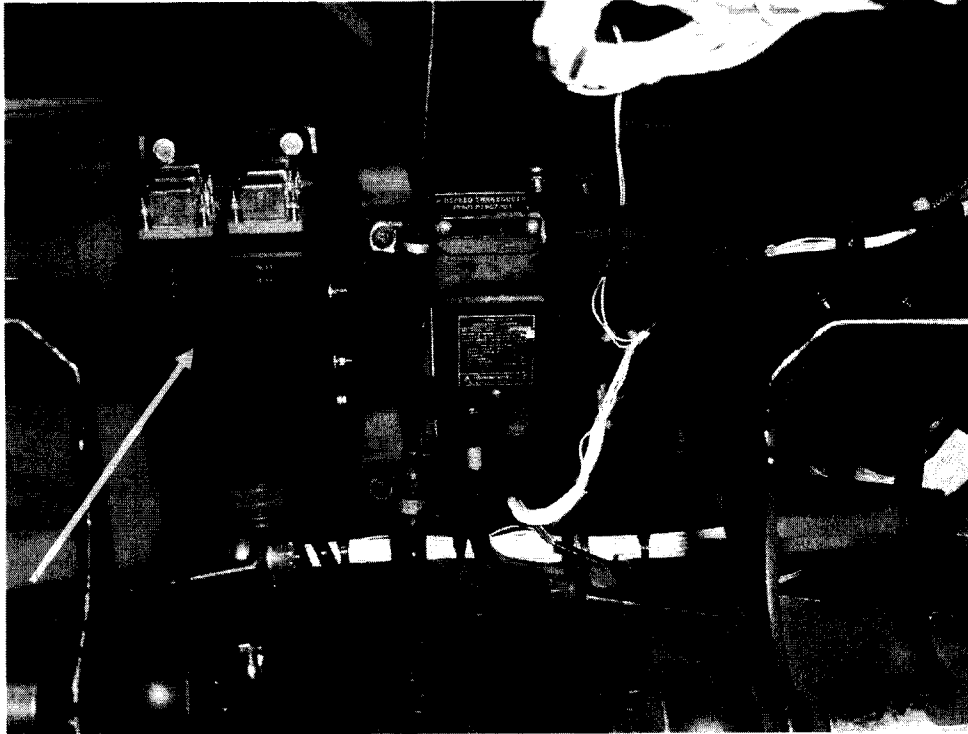


Figure 9. Copilot side mounting bracket assembly installation

- (111) Drill two (2) #10 holes to relocate the ADF ARN-147 grounding screws. See Figure 8.
- (112) Align Relay Bracket Assembly (pn 1005478-10) mounting holes over the installed clip assemblies (pn 1005439-10) on the bulkhead in the copilot's side of the aircraft forward of the copilot side foot pedals.
- (113) Secure Relay Bracket Assembly (pn 1005478-10) to installed clip assemblies (pn 1005439-10) nutplates using four (4) machine screws (pn NAS1801-3-8), and four (4) flat washers (pn NAS1149D0332J). See Figure 9.

**WARNING**

**Chemical film is extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (114) Touch up all exposed and bare metal surfaces created during modification with Alodine 1201 per MIL-C-5541 Class 1A, Form 3, Method B.

**WARNING**

**Primer is flammable and extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (115) Touch up all exposed and bare metal surfaces created during modification with one coat of Primer (MIL-PRF-23377, Type I, Class C). Do not paint until primer has properly dried.

**WARNING**

**Urethane paint is flammable and extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.**

- (116) Paint two coats of Urethane (MIL-PRF-85285, Type I, Color 37038 (Black) per FED-STD-595) over primed surfaces. Allow paint to properly dry before applying second coat.

**WARNING**

**Power supply contains a capacitor within the unit. A potential shock hazard exists on connector pin D and power supply fuse.**

- (117) Reinstall power supply LVPSI (pn 58910-PS622) into the Nose Compartment at FS 184, WL 222, and RBL 24 using four (4) removed mounting screws through the two structural angles secured to the aft side of the bulkhead at FS 184, WL 222, and RBL 24. Reconnect power supply connector.

f. **Nose Compartment Installation. Reference Drawing 1005440. Reference Figures 1 and 2.**

- (1) Locate existing clamps in the nose compartment. Determine if existing clamps can be used to secure the PLGR cable. If existing clamps can be used, skip to step f (11).
- (2) Obtain two (2) threaded inserts (pn 80-004-2-6) and one (1) structural Adhesive Kit (pn EA9309NA).

**WARNING**

**Proceed with caution when drilling into aircraft structure.**

- (3) Refer to Figure 1 for location and drill two (2) pilot holes in forward electronics bay shelf using 1/8" drill bit. Take precautions to drill only through the upper sheet of the shelf.
- (4) Use 1/2" diameter drill bit or hole cutter to enlarge hole. With a scribe or similar tool remove shelf core material down to the bottom sheet of the composite shelf and also 1/4"-nches back from hole diameter. Deburr hole and ensure all shavings are retained, removed, and discarded.
- (5) Install two (2) threaded inserts (pn 80-004-2-6) into holes using insert location tabs to suspend inserts in hole.

**WARNING**

**Structural adhesive can cause eye and skin irritation. Avoid contact. Avoid breathing vapors. Wash after handling.**

- (6) Mix structural adhesive kit (p/n EA9309NA) per instructions on kit. Using a syringe or other method, inject adhesive into one hole in each insert location tab until adhesive emerges from adjacent hole free of air bubbles. Take precautions to keep excess adhesive off of shelf.
- (7) Allow adhesive to cure and remove location tabs from shelf

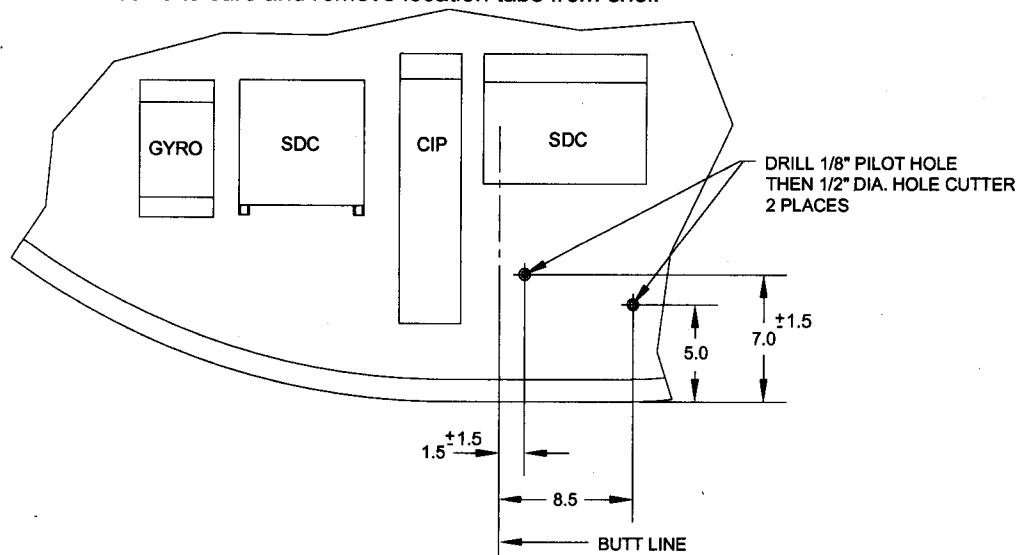


Figure 1

- (8) Obtain one (1) clamp (pn 7C27-6BA), one (1) clamp (pn 7C27-13BA), two (2) machine screw (pn NAS1801-3-6), and two (2) flat washer (pn NAS1149D0332J).
- (9) Align one (1) clamp (pn 7C27-6BA) over threaded insert closest to the Command Instrument Processor (pn 146310-7). Secure using one (1) machine screw (pn NAS1801-3-6), and one (1) flat washer (pn NAS1149D0332J).
- (10) Align one (1) clamp (pn 7C27-13BA) over the threaded insert second closest to the Command Instrument Processor (pn 146310-7). Secure using one (1) machine screw (pn NAS1801-3-6), and one (1) flat washer (pn NAS1149D0332J).
- (11) Locate existing Signal Data Converter (pn CV-3338A/ASN-128B) in Nose Compartment FS 177, WL 215, and RBL 15.
- (12) Remove Signal Data Converter (pn CV-3338A/ASN-128B) per equipment removal list (A241732D002) by removing four (4) mounting screws and seven (7) connectors from Signal Data Converter. Retain mounting hardware for installation of new Signal Data Converter.
- (13) Remove existing Signal Data Converter decal from Nose Compartment floor.

**WARNING**

**Acetone is combustible and toxic. It can irritate skin. Use only with adequate ventilation. In case of contact, immediately flush skin or eyes with clean water. Get medical attention for eyes.**

- (14) Clean Nose Compartment floor areas designated for decal installations using Acetone or equivalent leaving a clean dry surface.

- (15) Remove the paper backing from decal (pn 1005441-67). Align and adhere decal in the same location and orientation as the removed decal in step f(12). Trim decal as required for proper fit. Edge sealer may be applied.
- (16) Remove the paper backing from decal (pn 1005441-69). Align and adhere decal near installed clamp from step f(9). Trim decal as required for proper fit. Edge sealer may be applied. See Figure 2.

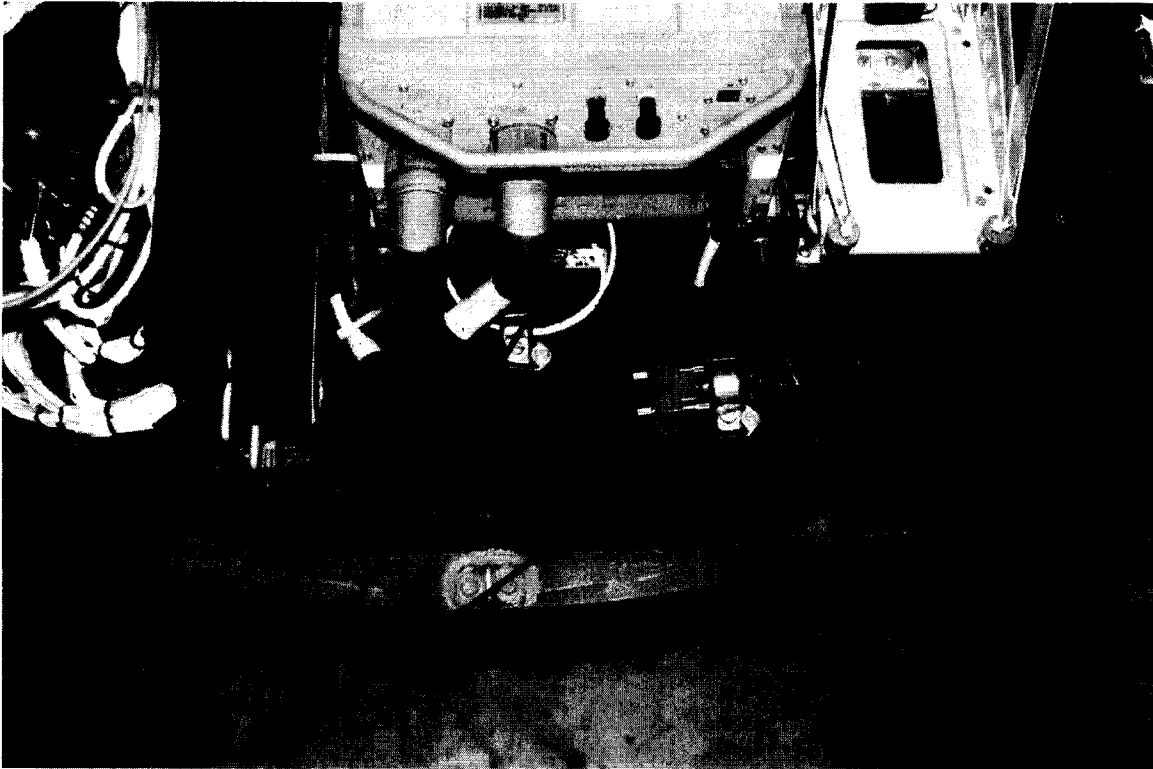


Figure 2. PLGR cable installation

- (17) Obtain one (1) Harness Assembly, W01-P701R (pn 1005457-10).
- (18) Clamp Harness Installation, W01-P701R (pn 1005457-10) to vertical bracket inboard of Signal Data Converter (pn P320A002-02) and route harness under Command Instrument Processor (pn 146310-7) mounting tray.
- (19) Secure Harness Installation, W01-P701R (pn 1005457-10) to the clamps installed in step f(8) and f(9). Coil excess cable in clamp from step f(8), and secure connector in clamp from step f(9). See Figure 3.
- (20) Obtain Spiral Wrap (pn T25FX0), wrap around harness assembly, W01-P701R (pn 1005457-10) as required, under area below Command Instrument Processor (pn 146310-7).

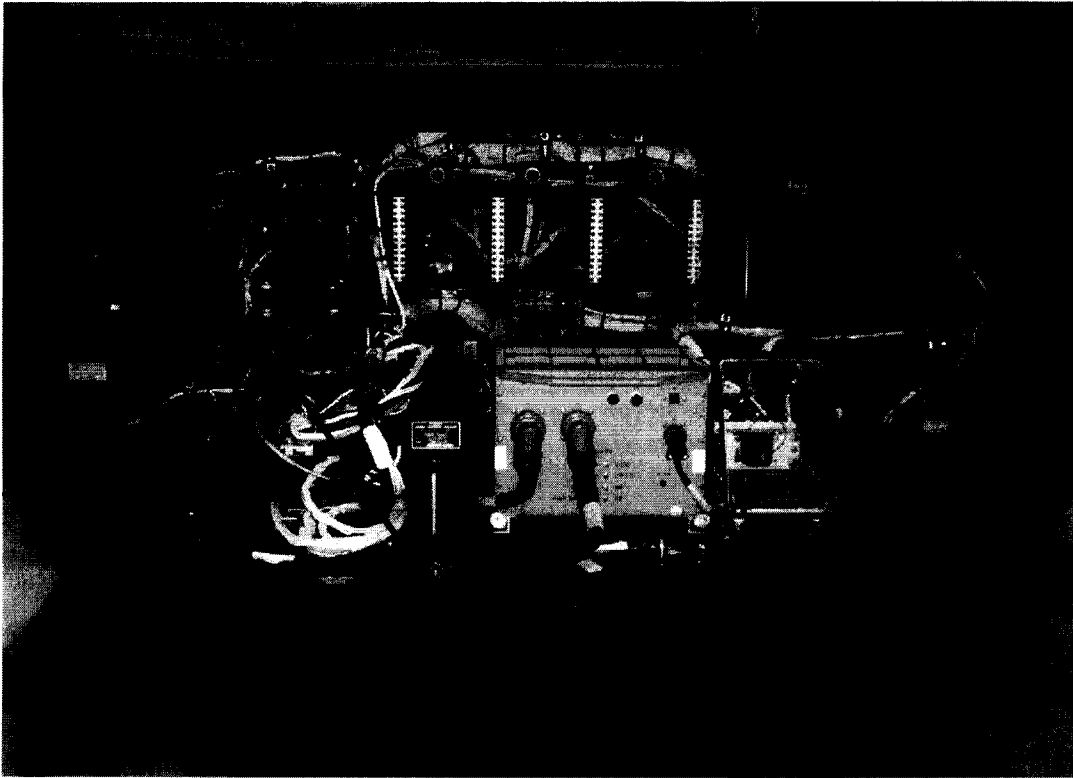


Figure 3. PLGR cable installation

- g. Wire Routing. Reference Drawing 1005442. Reference Figure 1 through 4. **Reference Appendix B (Interconnection Diagram)**

**Note:** Remove center pedestal equipment as needed.

**Note:** The installation team will determine a feasible wire routing solution.

- (1) Temporarily install SDC to determine harness length.
- (2) Wiring is to be installed and secured per UH-60 standard practices and AC 4313-1A. Install new harnesses along with existing harness on the helicopter.
- (3) Obtain fifty (50) flat washer (pn NAS1149D0332J), ten (10) self locking nut (pn MS21044N3), fifteen (15) machine screw (pn NAS1801-3-8), ten (10) machine screw (pn NAS1801-3-10), fifteen (15) machine screw (pn NAS1801-3-12), ten (10) machine screw (pn NAS1801-3-16), five (5) machine screw (pn NAS1801-3-24), ten (10) spacer (pn NAS43DD3-32), ten (10) loop clamp (pn MS21919WDG10), five (5) loop clamp (pn MS21919WDG13), five (5) loop clamp (pn MS21919WDG14), five (5) loop clamp (MS21919WDG16), five (5) loop clamp (MS21929WDG15), five (5) loop clamp (MS21929WDG12), five (5) loop clamp (MS21919WDG11), two hundred (200) tiedown strap (pn MS3367-5-9), one hundred twenty five (125) tiedown strap (pn MS3367-2-9), one (1) roll insulation tape (NSN5970-00-955-9976), one (1) roll lacing tape (pn AA52081-C-3), one (1) roll solder (pn SN60AWROL1), and five (5) spacer (pn NAS43DD3-64).
- (4) Use items obtained in step g(2) to assist in installation of wiring installations into UH-60. Use tiedown straps (pn MS3367) to secure new harnesses to existing harnesses where tiedown straps are already used on the existing harnesses on the helicopter. Use loop clamp (pn MS21919WDG) to secure new harnesses to existing harnesses where loop clamps are already used on the existing harnesses on the helicopter. Use lacing tape (pn AA52081-C-3) to secure new harnesses to existing harnesses where lacing tape is already used on the existing harnesses on the helicopter.
- (5) Obtain one (1) Harness Installation, W01-P700R (pn 1005463-10) kit.

**Note:** The installation team will determine a feasible wire routing solution.

- (6) From Harness Installation, W01-P700R (pn 1005463-10) kit, obtain one (1) harness assembly (pn 1005450-10), eleven (11) loose connector contacts (pn M39029/56-348), one (1) connector (pn GDB-25S), one (1) access connector (pn M85049/48-1-3), two (2) lock screw (pn D20419-21), twenty three (23) sealing plug (pn MS27488-20), one (1) shield termination (pn M83519/2-8), one (1) terminal lug (pn M7928/1-13), one (1) roll insulation tape (pn AA59163-11I0040).
- (7) Locate one (1) connector (pn GDB-25S).
- (8) Connector (pn GDB-25S) to be installed on the J3 location of the computer display unit (pn CP-1252C) in the cockpit center pedestal and have a reference designation of P688R. See Figure 1.



Figure 1. CDU connector in center pedestal

- (9) Wire connector (pn GDB-25S) (Reference Designation P688R) per wire Table 1, using equipment obtained in step g(4).

P688R Wire Table						
Component or Wire No.	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Instl. Tool	Notes
ASN128D-056A22WH	M39029/63-368	18	M22520/2-01	M22520/2-08	CIET-20HD	Contacts supplied with connector
ASN128D-057A22BL	M39029/63-368	17	M22520/2-01	M22520/2-08	CIET-20HD	Contacts supplied with connector
ASN128D-056A-SH	M83519/2-8 M7928/1-13	B/S	M22520/5-01	M22520/5-100	-	-

Table 1. Wire table for P688R connector

**Note:** Connector to be fully populated

- (10) Attach one (1) backshell (pn M85049/48-1-3) to connector (pn GDB-25S) using two (2) screw locks (pn D20419-21). Use insulation tape (pn AA59163-11I0040) as required.
- (11) Stow one (1) connector on pre-terminated end of harness assembly (pn 1005463-10) (Reference Designation P700R) so it may be connected to J8 location on the new signal data converter (pn P320A002-02) in the Nose Compartment.
- (12) Secure harness installation (pn 1005463-10) per steps g(1), g(2), g(3).
- (13) Obtain one (1) Harness Installation, W1, Pilot Instruments (pn 1005458-10) kit.

**Note:** The installation team will determine a feasible wire routing solution.

- (14) Secure one (1) connector (pn MS27467T19B35S) on pre-terminated end of harness assembly (pn 1005445-10) (Reference Designation DGNS7-P1) to Bulkhead connector (pn MS27656T19B35P)(Reference Designation DGNS7-J1) on the bottom side of the pilot side mounting bracket (pn 1005438-01) located on the cockpit pilot side bulkhead.
- (15) From Harness Installation, W1, Pilot Instruments (pn 1005458-10) kit, obtain one (1) harness assembly (pn 1005445-10), six (6) electrical contact (pn M39029/56-348), six (6) electrical contact (pn M39029/5-115), one (1) electrical contact (pn M39029/56-351), one (1) electrical contact (pn M39029/56-352), nine (9) shield termination (pn M83519/2-8), four (4) shield termination (pn M83519/1-2), four (4) terminal lug (pn M7928/1-14), four (4) electrical splice (pn M81824/1-2), four (4) electrical contact (pn M39029/63-368).

**NOTE: ROUTE WIRING PER WIRING TABLES**  
**P305R, P317R, P696R, P700R, P149R, and DGNS8-P1**

- (16) Locate one (1) connector (Reference Designation P305R) on the pilot HSI located on the forward side of the pilot instrument panel.
- (17) Disconnect connector (Reference Designation P305R) from pilot HSI.
- (18) Wire connector (Reference Designation P305R) per wire Table 2, using equipment obtained in step g(14).

P305R Wire Table						
Component or Wire No.	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Instl. Tool	Notes
ASN128D-007A22WH	M39029/5-115	*B	M22520/1-01	M22520/1-02	M81969/14-11	
JMPR7	M39029/5-115	*C	M22520/1-01	M22520/1-02	M81969/14-11	
ASN128D-007A-SH	M83519/1-2	FLOAT	-	-	-	
ASN128D-001A22WH	M39029/5-115	*W	M22520/1-01	M22520/1-02	M81969/14-11	
ASN128D-002A22BL	M39029/5-115	*V	M22520/1-01	M22520/1-02	M81969/14-11	
ASN128D-001A-SH	M83519/1-2	FLOAT	-	-	-	

ASN128D-011G22	M39029/5-115	*H	M22520/1-01	M22520/1-02	M81969/14-11	
ASN128D-100A22WH	M39029/5-115	*A	M22520/1-01	M22520/1-02	M81969/14-11	
ASN128D-100A-SH	M83519/1-2	FLOAT	-	-	-	
ASN128D-101A22BL	-	SP019	-	-	-	
ASN128D-008A22BL	-	SP019	-	-	-	
JMPR7	M81824/1-2	SP019	M22520/5-01	M22520/5-103	-	

Table 2. Wire table for P305R connector

- (19) Locate one (1) connector (Reference Designation P317R) on the pilot HSI/VSI Mode Select Panel located on the forward side of the pilot instrument panel.
- (20) Disconnect connector (Reference Designation P317R) from pilot HSI/VSI Mode Select Panel.
- (21) Wire connector (Reference Designation P317R) per wire Table 3, using equipment obtained in step g(14).

P317R Wire Table						
Component or Wire No.	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Instl. Tool	Notes
ASN128D-007D22WH	M39029/56-348	73	M22520/2-01	M22520/2-07	M81969/14-01	
JMPR5	M39029/56-348	100	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-007D-SH	M83519/2-8	NOTE	-	-	-	To Shield ASN128D-100D-SH
ASN128D-001D22WH	M39029/56-348	57	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-002D22BL	M39029/56-348	52	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-001D-SH	M83519/2-8 M7928/1-14	B/S	M22520/5-01	M22520/5-100	-	Crimp terminal lug to shield termination
ASN128D-100D22WH	M39029/56-348	90	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-100D-SH	M83519/2-8 M7928/1-14	B/S	M22520/5-01	M22520/5-100	-	Crimp terminal lug to shield termination
ASN128D-101D22BL	-	SP017	-	-	-	
ASN128D-008D22BL	-	SP017	-	-	-	
JMPR5	M81824/1-2	SP017	M22520/5-01	M22520/5-103	-	
ASN128D-011F22	M39029/56-348	72	M22520/2-01	M22520/2-07	M81969/14-01	

Table 3. Wire table for P317R connector

- (22) Locate one (1) connector (Reference Designation P696R) on the J1 location of the signal data converter (pn P320A002-02) (Reference Designation P695R).
- (23) Disconnect connector (Reference Designation P696R) from the signal data converter (pn P320A002-02) (Reference Designation P695R).
- (24) Wire connector (Reference Designation P696R) per wire Table 4, using equipment obtained in step g(14).

P696R Wire Table						
Component or Wire No.	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Instl. Tool	Notes
ASN128D-010A22	M81824/1-2	SP008	M22520/5-01	M22520/5-103	-	To existing wire ASN128-13E16 from P249 pin *A
ASN128D-009E22	M39029/56-351	T	M22520/1-01	M22520/1-04	M81969/14-10/RD	-
ASN128D-010N22	M81824/1-2	SP028	M22520/5-01	M22520/5-103	M81969/14-03/BL	-
ASN128D-010AD16	-	SP028	-	-	-	-
ASN128D-010AD16	M39029/56-352	W	M22520/5-01	M22520/5-103	M81969/14-03/BL	-

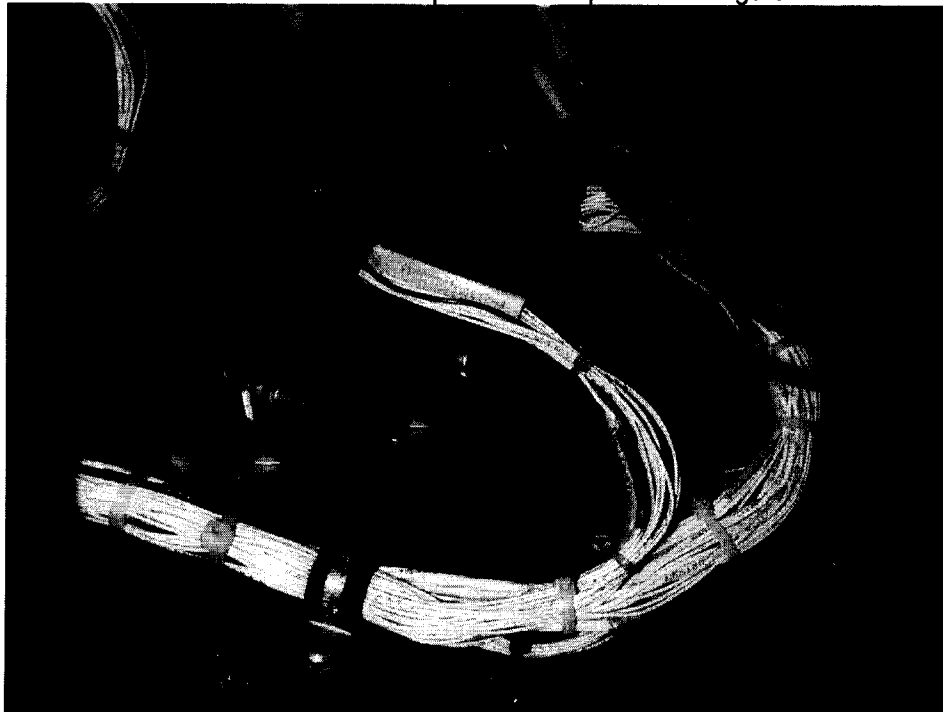
Table 4. Wire table for P696R connector

- (25) Locate one (1) connector (Reference Designation P700R) stowed to be installed on the J8 location of the signal data converter (pn P320A002-02) (Reference Designation P695R).
- (26) Wire connector (Reference Designation P700R) per wire Table 5, using equipment obtained in step g(14).

<b>P700R Wire Table</b>						
<b>Component or Wire No.</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Instl. Tool</b>	<b>Notes</b>
ASN128D-042A22	M39029/56-348	15	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-043A22	M39029/56-348	12	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-040A22	M39029/56-348	14	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-041A22	M39029/56-348	10	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-039A22	M39029/56-348	11	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-058A22	M39029/56-348	13	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-012A22WH	M39029/56-348	33	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-013A22BL	M39029/56-348	32	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-014A22BL	M39029/56-348	34	M22520/2-01	M22520/2-07	M81969/14-01/GRN	Contacts supplied with connector
ASN128D-012A-SH	M83519/2-8 M7928/1-14	B/S	M22520/5-01	M22520/5-100	-	Crimp terminal lug to shield termination

**Table 5. Wire table for P700R connector**

- (27) Locate one (1) connector (Reference Designation P149R) on the VOR/ILS receiver (pn ARN-123) located in the forward center console inboard of the pilot side kick panel. See Figure 2.



**Figure 2. VOR receiver connector in pilot side kick panel**

- (28) Disconnect connector (Reference Designation P149R) from the VOR/ILS receiver (pn ARN-123).
- (29) Wire connector (Reference Designation P149R) per wire Table 6, using equipment obtained in step g(14).

<b>P149R Wire Table</b>						
<b>Component or Wire No.</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Instl. Tool</b>	<b>Notes</b>
ASN128D-003A22WH	M39029/63-368	8	M22520/2-01	M22520/2-08	M81969/14-10	
ASN128D-004A22BL	M81824/1-2	SP009	M22520/5-01	M22520/5-103	-	
ASN128D-004J22	-	SP009	-	-	-	
ASN128D-004K22	-	SP009	-	-	-	
ASN128D-004J22	M39029/63-368	33	M22520/2-01	M22520/2-08	M81969/14-10	
ASN128D-004K22	M39029/63-368	34	M22520/2-01	M22520/2-08	M81969/14-10	
ASN128D-006A22OR	M39029/63-368	36	M22520/2-01	M22520/2-08	M81969/14-10	
ASN128D-003A-SH	M83519/2-8 M7928/1-13	GND149-1	M22520/5-01	M22520/5-100	-	

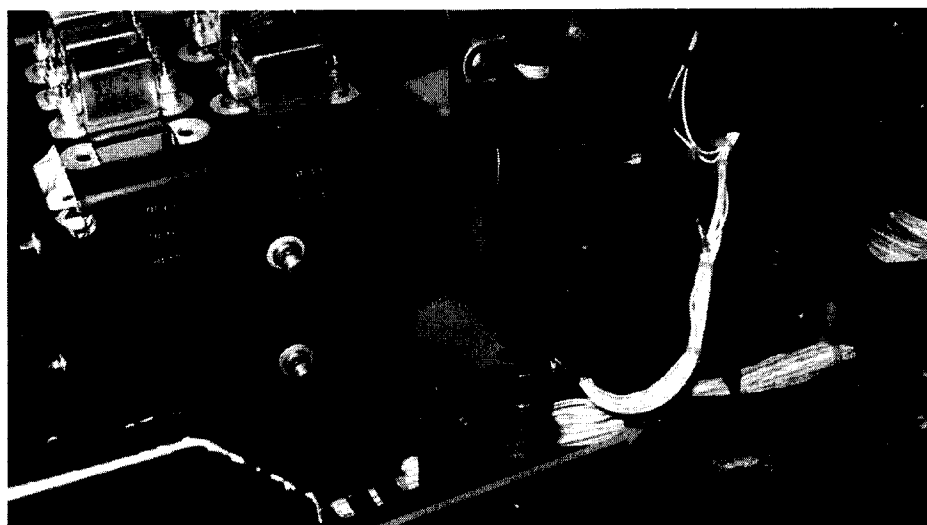
Table 6. Wire table for P149R connector

- (30) Locate one (1) connector (pn MS27467T19B35S) (Reference Designation DGNS8-P1) on the bottom side of the copilot side relay bracket assembly (pn 1005478-10) located on the cockpit copilot side bulkhead.
- (31) Disconnect connector (pn MS27467T19B35S) (Reference Designation DGNS8-P1) from Relay Bracket Assembly (pn 1005478-10).
- (32) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS8-P1) per wire Table 7, using equipment obtained in step g(14).

<b>DGNS8-P1 Wire Table</b>						
<b>Component or Wire Number</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Installation Tool</b>	<b>Notes</b>
ASN128D-003F22WH	M39029/56-348	1	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-004F22BL	M39029/56-348	2	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-006F22OR	M39029/56-348	3	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-014E22OR	M39029/56-348	5	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-013E22BL	M39029/56-348	6	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-012E22WH	M39029/56-348	7	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-012E-SH	M83519/2-8 M39029/56-348	8	M22520/2-01	M22520/2-07	M81969/14-01	Crimp contact to shield termination
ASN128D-010P22	M39029/56-348	9	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-010AB22	M39029/56-348	12	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-009H22	M39029/56-348	13	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-010S22	M39029/56-348	17	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-010V22	M39029/56-348	33	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-010X22	M39029/56-348	42	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-010Z22	M39029/56-348	44	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-024B22WH	M39029/56-348	46	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-025B22BL	M39029/56-348	47	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-024B-SH	M83519/2-8 M39029/56-348	48	M22520/2-01	M22520/2-07	M81969/14-01	Crimp contact to shield termination
ASN128D-003G22WH	M39029/56-348	51	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-004G22BL	M39029/56-348	52	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-006G22OR	M39029/56-348	53	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-003G-SH	M83519/2-8 M39029/56-348	54	M22520/2-01	M22520/2-07	M81969/14-01	Crimp contact to shield termination

Table 7. Wire table for DGNS8-P1connector

- (33) Reconnect connector (pn MS27467T19B35S) (Reference Designation DGNS8-P1) on the bottom side of the copilot mounting bracket assembly (pn 1005478-10) located on the cockpit copilot side bulkhead.



For safety of flight this clamp shall be installed

Figure 3. Clamp Installation

**WARNING**

**For safety of flight this clamp shall be installed**

- (34) Secure harness installation (pn 1005458-10) per steps g(1), g(2), g(3).
- (35) Obtain one (1) Harness Installation, W2, CoPilot Instruments (pn 1005459-10) kit.

**Note:** The installation team will determine a feasible wire routing solution.

- (36) From Harness Installation, W2, CoPilot Instruments (pn 1005459-10) kit, obtain one (1) harness assembly (pn 1005446-10), six (6) electrical contact (pn M39029/5-115), seven (7) electrical contact (pn M39029/56-348), four (4) shield termination (pn M83519/2-8), four (4) shield termination (pn M83519/1-2), two (2) terminal lug (pn M7928/1-14), four (4) electrical splice (pn M81824/1-2), and three (3) electrical contacts (pn M39029/4-110).
- (37) Locate one (1) connector (Reference Designation P300R) on the copilot HSI/VSI Mode Select Panel located on the forward side of the pilot instrument panel.
- (38) Disconnect connector (Reference Designation P300R) from copilot HSI/VSI Mode Select Panel.
- (39) Wire connector (Reference Designation P300R) per wire Table 8, using equipment obtained in step g(35).

P300R Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/Die	Installation Tool	Notes
ASN128D-053A22	M39029/56-348	25	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-021D22WH	M39029/56-348	57	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-022D22BL	M39029/56-348	52	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-021D-SH	M83519/2-8 M7928/1-13	B/S	M22520/2-01	M22520/2-07	M81969/14-01	Crimp terminal lug to shield termination
ASN128D-023G22	M39029/56-348	72	M22520/2-01	M22520/2-07	M81969/14-01	

Table 8. Wire table for P300R connector

- (40) Locate one (1) connector (Reference Designation P302R) on the copilot HSI located on the forward side of the pilot instrument panel.
- (41) Disconnect connector (Reference Designation P302R) from copilot HSI.
- (42) Wire connector (Reference Designation P302R) per wire Table 9, using equipment obtained in step g(35).

<b>P302R Wire Table</b>						
<b>Component or Wire Number</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Installation Tool</b>	<b>Notes</b>
ASN128D-019A22WH	M39029/5-115	*B	M22520/2-01	M22520/2-07	M81969/14-01	
JMPR9	M39029/5-115	*C	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-019A-SH	M39029/1-2	Float	-	-	-	
ASN128D-102A22WH	M39029/5-115	*A	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-102A-SH	M39029/1-2	Float	-	-	-	
ASN128D-103A22BL	-	SP021	-	-	-	
ASN128D-020A22BL	-	SP021	-	-	-	
JMPR9	M81824/1-2	SP021	M22520/5-01	M22520/5-103	-	
ASN128D-023A22	M39029/5-115	*H	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-021A22WH	M39029/5-115	*W	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-022A22BL	M39029/5-115	*V	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-021A-SH	M39029/1-2	Float	-	-	-	

Table 9. Wire table for P302R connector

- (43) Locate one (1) connector (Reference Designation P317R) on the pilot HSI/VSI Mode Select Panel located on the forward side of the pilot instrument panel.
- (44) Disconnect connector (Reference Designation P317R) from pilot HSI/VSI Mode Select Panel.
- (45) Wire connector (Reference Designation P317R) per wire Table 10, using equipment obtained in step g(35).

<b>P317R Wire Table</b>						
<b>Component or Wire Number</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Installation Tool</b>	<b>Notes</b>
ASN128D-019D22WH	M39029/56-348	102	M22520/2-01	M22520/2-07	M81969/14-01	
JMPR11	M39029/56-348	62	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-019D-SH	M83519/2-8	NOTE	-	-	-	To Shield ASN128D-102D-SH
ASN128D-102D22WH	M39029/56-348	61	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-102D-SH	M83519/2-8 M7928/1-14	B/S	M22520/5-01	M22520/5-100	-	
ASN128D-103D22BL	-	SP023	-	-	-	
ASN128D-020D22BL	-	SP023	-	-	-	
JMPR11	M81824/1-2	SP023	M22520/5-01	M22520/5-103	-	
ASN128D-015A22WH	M39029/56-348	85	M22520/1-01	M22520/1-02	M81989/14-11	
ASN128D-016A22BL	M81824/1-2	SP026	M22520/5-01	M22520/5-103	-	
ASN128D-018A22BL	-	SP026	-	-	-	
JMPR15	-	SP026	-	-	-	
JMPR15	M39029/56-348	109	M22520/1-01	M22520/1-02	M81989/14-11	
ASN128D-015A-SH	M83519/2-8	NOTE	-	-	-	To Shield ASN128D-017A-SH
ASN128D-017A22WH	M39029/56-348	97	M22520/1-01	M22520/1-02	M81989/14-11	
ASN128D-017A-SH	M83519/1-2	Float	-	-	-	

Table 10. Wire table for P317R connector

- (46) Locate one (1) connector (Reference Designation P700R) stowed to be installed on the J8 location of the signal data converter (pn P320A002-02) (Reference Designation P695R).

- (47) Wire connector (Reference Designation P700R) per wire Table 11, using equipment obtained in step g(35).

P700R Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-026A22	M39029/56-348	17	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-027A22	M39029/56-348	16	M22520/2-01	M22520/2-07	M81969/14-01	
ASN128D-052A22	M81824/1-2	SP007	M22520/5-01	M22520/5-103	-	Remove existing wire L3931E24 from P300R pin 25

Table 11. Wire table for P700R connector

- (48) Secure connector (pn MS27467T19B35S) on pre-terminated end of harness assembly (pn 1005446-10) (Reference Designation DGNS8-P1) to Bulkhead connector (pn MS27656T19B35P)(Reference Designation DGNS8-J1) on the bottom side of the copilot side mounting bracket (pn 1005438-01) located on the cockpit copilot side bulkhead.
- (49) Secure harness installation (pn 1005459-10) per steps g(1), g(2), g(3).
- (50) Obtain one (1) Harness Installation, W5, Loose Wires (pn 1005462-10) kit.

**Note:** The installation team will determine a feasible wire routing solution.

- (51) From Harness Installation, W5, Loose Wires (pn 1005462-10) kit, obtain one (1) harness assembly (pn 1005449-10), eight (8) electrical contact (pn M39029/5-115), six (6) electrical contact (pn M39029/56-348), four (4) shield termination (pn M83519/2-8), four (4) shield termination (pn M83519/1-2), two (2) terminal lug (pn M7928/1-13), and two (2) electrical splice (pn M81824/1-2).
- (52) Locate one (1) connector (Reference Designation P302R) on the copilot HSI located on the forward side of the pilot instrument panel.
- (53) Disconnect connector (Reference Designation P302R) from copilot HSI.
- (54) Wire connector (Reference Designation P302R) per wire Table 12 using equipment obtained in step g(50).

P302R Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
2F3749A22BL	M39029/5-115	*D	M22520/1-01	M22520/1-02	M81969/14-11	
2F3750B22WH	M39029/5-115	*E	M22520/1-01	M22520/1-02	M81969/14-11	
2F3749A-SH	M83519/1-2	Float	-	-	-	
2F3751A22BL	M39029/5-115	*G	M22520/1-01	M22520/1-02	M81969/14-11	
2F3750A22WH	M39029/5-115	*F	M22520/1-01	M22520/1-02	M81969/14-11	
2F3751A-SH	M83519/1-2	Float	-	-	-	

Table 12. Wire table for P302R connector

- (55) Locate one (1) connector (Reference Designation P305R) on the pilot HSI located on the forward side of the pilot instrument panel.
- (56) Disconnect connector (Reference Designation P305R) from pilot HSI.
- (57) Wire connector (Reference Designation P305R) per wire Table 13 using equipment obtained in step g(50).

<b>P305R Wire Table</b>						
<b>Component or Wire Number</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Installation Tool</b>	<b>Notes</b>
2F3756A22BL	M39029/5-115	*D	M22520/1-01	M22520/1-02	M81969/14-11	
2F3754A22WH	M39029/5-115	*E	M22520/1-01	M22520/1-02	M81969/14-11	
2F3756A-SH	M83519/1-2	Float	-	-	-	
2F3753A22BL	M39029/5-115	*G	M22520/1-01	M22520/1-02	M81969/14-11	
2F3754B22WH	M39029/5-115	*F	M22520/1-01	M22520/1-02	M81969/14-11	
2F3753A-SH	M83519/1-2	Float	-	-	-	

Table 13. Wire table for P305R connector

- (58) Locate one (1) connector (Reference Designation P317R) on the pilot HSI/VSI Mode Select Panel located on the forward side of the pilot instrument panel.
- (59) Disconnect connector (Reference Designation P317R) from pilot HSI/VSI Mode Select Panel.
- (60) Wire connector (Reference Designation P317R) per wire Table 14, using equipment obtained in step g(50).

<b>P317R Wire Table</b>						
<b>Component or Wire Number</b>	<b>Connection Material</b>	<b>Conn. Point</b>	<b>Crimp Tool</b>	<b>Positioner/ Die</b>	<b>Installation Tool</b>	<b>Notes</b>
2F3749A22BL	M39029/56-348	99	M22520/2-01	M22520/2-07	M81969/14-01	
2F3749A-SH	M83519/2-8	NOTE	-	-	-	To Shield 2F3751A-SH
2F3751A22BL	M39029/56-348	98	M22520/2-01	M22520/2-07	M81969/14-01	
2F3751A-SH	M83519/2-8 M7928/1-13	B/S	M22520/5-01	M22520/5-100	-	
2F3750B22WH	-	SP025	-	-	-	
2F3750A22WH	-	SP025	-	-	-	
JMPR14	M81824/1-2	SP025	M22520/5-01	M22520/5-103	-	
JMPR14	M39029/56-348	86	M22520/2-01	M22520/2-07	M81969/14-01	
2F3756A22BL	M39029/56-348	74	M22520/2-01	M22520/2-07	M81969/14-01	
2F3756A-SH	M83519/2-8	NOTE	-	-	-	To Shield 2F3753A-SH
2F3753A22BL	M39029/56-348	108	M22520/2-01	M22520/2-07	M81969/14-01	
2F3753A-SH	M83519/2-8 M7928/1-13	B/S	M22520/5-01	M22520/5-100	-	
2F3754A22WH	-	SP027	-	-	-	
2F3754B22WH	-	SP027	-	-	-	
JMPR13	M81824/1-2	SP027	M22520/5-01	M22520/5-103	-	
JMPR13	M39029/56-348	110	M22520/2-01	M22520/2-07	M81969/14-01	

Table 14. Wire table for P317R connector

- (61) Secure harness installation (pn 1005462-10) per steps g(1), g(2), g(3).
- (62) Obtain one (1) Harness Installation, W01-DGNS1 (pn 1005464-10) kit which contains one (1) harness assembly (pn 1005451-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (63) Disconnect connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) from mounting bracket (pn 1005438-01).
- (64) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side Relay Bracket Assembly (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (65) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 15 and Table 16, using equipment obtained in step g(61).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-038E22	M39029/56-348	53	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-039E22	M39029/56-348	55	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 15. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-044C22	M39029/56-348	36	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 16. Wire table for DGNS8-P1connector

- (66) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005451-10) (Reference Designation DGNS1-P1) to annunciator (pn LED-40-18-KG-31938) (Reference Designation DGNS1-J1) in the left hand most annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel.
- (67) Secure harness installation (pn 1005464-10) per steps g(1), g(2), g(3).
- (68) Obtain one (1) Harness Installation, W01-DGNS2 (pn 1005465-10) kit which contains one (1) harness assembly (pn 1005452-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (69) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side Relay Bracket Assembly (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (70) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 17 and Table 18, using equipment obtained in step g(67).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-040E22	M39029/56-348	57	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-041E22	M39029/56-348	59	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 17. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-045C22	M39029/56-348	35	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 18. Wire table for DGNS8-P1connector

- (71) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005465-10) (Reference Designation DGNS2-P1) to annunciator (pn LED-40-18-KG-31937) in the center annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel.
- (72) Secure harness installation (pn 1005465-10) per steps g(1), g(2), g(3).
- (73) Obtain one (1) Harness Installation, W01-DGNS3 (pn 1005466-10) kit which contains one (1) harness assembly (pn 1005453-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (74) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side mounting bracket (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (75) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 19 and Table 20, using equipment obtained in step g(72).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-042E22	M39029/56-348	61	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-043E22	M39029/56-348	63	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 19. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-046C22	M39029/56-348	34	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 20. Wire table for DGNS8-P1connector

- (76) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005453-10) (Reference Designation DGNS3-P1) to annunciator (pn LED-40-18-KG-31936) in the right hand most annunciator hole below the pilot side clock (pn ABU-11/A) on the instrument panel.
- (77) Secure harness installation (pn 1005466-10) per steps g(1), g(2), g(3).
- (78) Obtain one (1) Harness Installation, W01-DGNS4 (pn 1005467-10) kit which contains one (1) harness assembly (pn 1005454-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (79) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side mounting bracket (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (80) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 21 and Table 22, using equipment obtained in step g(77).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-038F22	M39029/56-348	54	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-039F22	M39029/56-348	56	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 21. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-048C22	M39029/56-348	41	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 22. Wire table for DGNS8-P1connector

- (81) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005454-10) (Reference Designation DGNS4-P1) to annunciator (pn LED-40-18-KG-31938) in the left hand most annunciator hole below the copilot side clock (pn ABU-11/A) on the instrument panel.

- (82) Secure harness installation (pn 1005467-10) per steps g(1), g(2), g(3).
- (83) Obtain one (1) Harness Installation, W01-DGNS5 (pn 1005468-10) kit which contains one (1) harness assembly (pn 1005455-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (84) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side mounting bracket (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (85) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 23 and Table 24, using equipment obtained in step g(82).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-040F22	M39029/56-348	58	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-041F22	M39029/56-348	60	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 23. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-049C22	M39029/56-348	40	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 24. Wire table for DGNS8-P1connector

- (86) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005455-10) (Reference Designation DGNS5-P1) to annunciator (pn LED-40-18-KG-31936) in the center annunciator hole below the copilot side clock (pn ABU-11/A) on the instrument panel.
- (87) Secure harness installation (pn 1005468-10) per steps g(1), g(2), g(3).
- (88) Obtain one (1) Harness Installation, W01-DGNS6 (pn 1005469-10) kit which contains one (1) harness assembly (pn 1005456-10).

**Note:** The installation team will determine a feasible wire routing solution.

- (89) Locate two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side mounting bracket (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.
- (90) Wire connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) per wire Table 25 and Table 26, using equipment obtained in step g(87).

DGNS7-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-042F22	M39029/56-348	62	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector
ASN128D-043F22	M39029/56-348	64	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 25. Wire table for DGNS7-P1connector

DGNS8-P1 Wire Table						
Component or Wire Number	Connection Material	Conn. Point	Crimp Tool	Positioner/ Die	Installation Tool	Notes
ASN128D-050C22	M39029/56-348	39	M22520/2-01	M22520/2-07	M81969/14-01	Contacts supplied with connector

Table 26. Wire table for DGNS8-P1 connector

- (91) Secure connector (pn M22885/10818200) on pre-terminated end of harness assembly (pn 1005469-10) (Reference Designation DGNS6-P1) to annunciator (pn LED-40-18-KG-31937) in the right hand most annunciator hole below the copilot side clock (pn ABU-11/A) on the instrument panel.
- (92) Secure harness installation (pn 1005469-10) per steps g(1), g(2), g(3).
- (93) Reconnect two (2) connector (pn MS27467T19B35S) (Reference Designation DGNS7-P1, and DGNS8-P1) on the bottom side of the pilot and copilot side mounting bracket (pn 1005477-10 and 1005478-10) located on the cockpit pilot and copilot side bulkhead.

**h. Harness and Cable Installation Verification.**

- (1) Perform point-to-point wire continuity check in accordance with drawing A241732D010.
- (2) Power Pin Test.
- (3) Ensure that no harness assemblies are attached to the Line Replaceable Units (LRU).
- (4) Turn off the battery switch.
- (5) Perform Power check in accordance with drawing A241732D010.

**i. Installation of Group B (LRU) gear**

- (1) Install Signal Data Converter (pn P320A002-02) and seven (7) new connectors using four (4) existing mounting screws.
- (2) Remove pin filters from the SDC connectors and store them.

**11. Bonding Test.**

- a. Ensure the LRU's are installed securely.
- b. Ensure that no harness assemblies are attached to the LRU's.
- c. Use a Micro-ohmmeter and measure from the LRU to airframe ground.
- d. The resistance should be less than 5 milliohms between the LRU and the airframe.

**12. Reassemble the Aircraft.**

- a. Reinstall interior panels as required to close wire runs.

**WARNING**

**Power supply contains a capacitor within the unit. A potential shock hazard exists on connector pin D and power supply fuse.**

- b. Reinstall items listed in Equipment Removal List A241732D002.

- (1) VOR R/T (pn ARN-123) – Forward Center Console
- (2) Power Supply (pn 58910-PS622) – Nose Compartment
- (3) Computer Display Unit (pn CP-1252/ASN-128) – Center Pedestal
- (4) Signal Data Converter (pn CV-3338A/ASN-128B) – Nose Compartment
- (5) ADF ARN-149 – Nose Compartment (if installed)

- (6) Central Display Unit – Instrument Panel
  - (7) Blade Deice Control Panel – Instrument Panel
  - (8) Blade Deice Test Panel – Instrument Panel
  - (9) Ice Rate Meter – Instrument Panel
  - (10) Caution/Advisory Panel – Instrument Panel
  - (11) ASN-43 Directional Gyro – Nose Compartment
  - (12) Stabilator System Test Panel – Nose Compartment
  - (13) Aviators Night Vision Imaging System Heads Up Display – Nose Compartment
- c. Reinstall forward center console kick panel on pilot side at RBL 10.0 between STA 187.0 and 197.0. Retain hardware for reinstallation
  - d. Reconnect Battery.
  - e. Reinstall aircraft battery cover from STA 247.0 at LBL 20.0.
  - f. Apply power to the aircraft.

### **13. Control Display Unit Modification.**

- a. Obtain Control Display Unit (pn CP-1252/ASN-128) from cockpit center pedestal location.
- b. Obtain CD titled "Software Loader Verifier for DGNS ASN/128B Control Display Unit (CDU), Software Loading Cable (pn 1005472-10) and laptop.
- c. Insert CD titled "Software Loader Verifier for DGNS ASN/128D Control Display Unit (CDU)"
- d. Install software onto laptop using file Installation.SLV4.WRI located on the CD (Note: If the software prompts the user to choose a version of a file, keep the newer file)

**Note:** Any power down sleep feature on laptop should be disabled before software download.

**Note:** Should computer power be interrupted, this will interrupt SLV upload. Apply the following procedures if this event should occur:

- 1. Disconnect parallel cable at CDU (128B).
  - 2. Reinstall aircraft serial plug at CDU (128B).
  - 3. Apply power to aircraft.
  - 4. Apply power to 128B CDU and set switch to NAV GS/TK
  - 5. Power down CDU, RMVD data plug at CDU.
  - 6. Power down ACFT.
  - 7. Reconnect laptop and software harness to CDU.
  - 8. Open SLV program.
  - 9. Load software files successfully.
- e. Shut down laptop
  - f. Install Control Display Unit into existing center pedestal location, connecting only cables W3P1 to J1 and W3P2 to J2. Do not screw into the center pedestal.
  - g. Connect Software Loading Cable connector labeled "To CDU J3 connector" to CDU J3 connector
  - h. Connect Software Loading Cable connector labeled "To computer COM1 port" into the COM1 port of the laptop
  - i. Turn on laptop
  - j. Run program SLV 4.0 (Start -> Programs -> SLV 4.0)
  - k. Select Processes| Load OFP from the SLV Main Page pull down menu

- l. When prompted, set CDU MODE selector to LAT/LONG (NOTE: during the loading process, the CDU MAL light will illuminate)
- m. Wait until the SLV reports that loading has completed. Verify that the checksum for each file loaded is as follows:
  - H399A988.TK1 0x84C254D5
  - H399A988.TK2 0x959B5E0E
  - H399A988.TK3 0x2459A8E3
- o. Turn CDU MODE selector to OFF
- p. Shut down laptop
- q. Remove Software Loading Cable from the laptop
- r. Remove Software Loading Cable from the CDU
- s. Connect Cable (W01-P700R) to CDU J3
- t. On the CDU, set MODE selector to TEST (EN will appear on the display)
- u. On the CDU, press KYBD, then set MODE selector to OFF
- v. Set the MODE selector to TEST
- w. After 15 seconds, verify the CDU display shows GO ALL, DB:P, and RS-232:P
- x. On CDU, set MODE selector to OFF
- y. Finish installation of the Control Display Unit

#### **14. Functional Test.**

- a. Performance Tests with the DGNS P3I System
  - (1) These performance tests are to be accomplished with a Signal Data Converter AN/ASN-128D and Control Display Unit with software loaded for the AN/ASN-128D system shown in subsection h (2) page 59.
  - (2) Test Description  
Power the helicopter under test and perform functional and operational tests in accordance with BAE Systems IFR Flight Plan Manual.
  - (3) Test Objectives  
To verify that the DGNS P3I new functionality can be entered properly and is operational.
  - (4) Success Criteria
    - a. The DGNS P3I system is installed correctly and operates properly when supplied by normal aircraft electrical power sources.
    - b. The DGNS P3I system accurately displays the HSI TO-FROM flag on the CDU.

(5) Assumptions and Constraints

The DGNS System has been installed and continuity, power, and grounding checks have been completed on all DGNS System components.

All measuring and test equipment have been properly calibrated and are current in accordance with MIL-STD-1839A, *Calibration and Measurement Requirements*, and TB 750-25, *Army Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Repair Support (C&RS) Program*.

(6) Test Setup

- a. Locate the test helicopter on the ramp outside of the hangar.
- b. Apply external power to the helicopter under test.
- c. Ensure a PCMCIA Data Transfer Device is available for use.

(7) Test Procedure

Perform the Operational Assessment as detailed below. This is a modification of the BAE Systems IFR Flight Plan Manual, dated 13 March 03.

Record the test results in the following data collection/record sheet titled Operational Assessment of the DGNS P3I New Functionality. Comments and observations may also be written on these sheets or on accompanying pages. Bold-Face type is used in the test procedure to indicate labeled or displayed items.

**Notes:** (pertains to the Data Collection/Record Sheet below)

1. If the display indicates Build: BRAVO, set the DISPLAY Selector to WIND-UTC/DATA and the MODE selector to LAT/LONG. Press the ENT key twice followed by the number that corresponds to the CONFIG selection. Press KYBD followed by key 2. The display will change to BUILD: DELTA. Press the ENT key. The display will ask to confirm the build change. Press key 9 followed by the ENT key to complete the build change. Turn the MODE selector to OFF and begin these procedures again.
2. If display indicates "DAFIF NOT VALID", the user must press the ENT key before continuing the test procedures.

## DATA COLLECTION/RECORD SHEET

## Operational Assessment of the DGNS P3I New Functionality

Test Performed By \_\_\_\_\_ of \_\_\_\_\_

Date Performed \_\_\_\_\_

With power applied, perform the following operational assessment. For each test step in the test results verification space enter "P" for Passed, "F" for Failed, "✓" for step or check completed, or NA for not applicable followed by the test official's initials. For any failed tests, a problem report shall be generated.

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Perform Self Test			
Set <b>MODE</b> selector to <b>GPS LDG</b>	The display indicates: <b>Build: DELTA</b> <b>WMM: 1/1/2000</b> <b>DATE: 3/2/2004</b> (If display shows BUILD: BRAVO, See Note 1) (See Note 2) Display then shows: <b>NO GPS LANDING end</b> Annunciators " <b>NO GPS</b> " and " <b>RAIM</b> " illuminate briefly, then go out		
Set <b>DISPLAY</b> selector to <b>GS/TK/NAV M</b>	Display shows: <b>NO GPS LANDING end</b>		
Set <b>MODE</b> selector to <b>LAMP TEST</b>	All annunciators are lit All edge lighting illuminates The MAL lamp illuminates		
Select <b>Doppler GPS</b> on pilot/co-pilot mode select panel			
Set <b>MODE</b> selector to <b>TEST</b>	Display will be similar to: <b>Vx: +147km/h</b> <b>Vy: +130 km/h</b> <b>Vz: +047 km/h</b> <b>A/D: 135° km/h</b>		
	Annunciator " <b>MSG</b> " lights and goes out		
	Annunciator " <b>NO GPS</b> " lights and goes out		
	Annunciator " <b>RAIM</b> " lights and goes out		
	Annunciator " <b>WPT</b> " lights and goes out		
	Annunciator " <b>HOLD</b> " lights and goes out		
	Annunciator " <b>APR</b> " lights and goes out		
	HSI TO-FROM flag flips and returns to the default position		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
	<p>After Doppler and/or GPS self tests have completed (approximately 15 seconds for Doppler, up to 2 minutes for GPS), one of the following displays is observed in the left and right displays (See chart below for possible test results)</p> <p>Display will also show:  <b>DB: P</b>                      <b>RS-232: P</b>  <b>0000</b>                      <b>more</b></p>		
Self Test Results			
Left Display	Right Display	Remarks	
GO	O	Doppler has completed BIT and is operating satisfactorily, GPS is still performing BIT (GPS has a two minute BIT cycle maximum). Note that a rotating bar in the display indicates that the GPS is still performing self test.	
GO	ALL	The entire system has completed BIT and is operating satisfactorily.	
GO	P	Pitch or Roll data is missing or exceeds 90°. In this case, pitch and roll in the computer are both set to zero and navigation in the Doppler mode continues with degraded operation. Problem may be in the vertical gyro or aircraft cabling.	
NG	C, R, S, or H followed by a numeric code	A failure has occurred in the computer display unit or the signal data converter power supply. The operator should not use the system.	
DN	GPS failure code	GPS has failed but operator can use Doppler to perform all navigation.	
DF	Doppler failure code	Doppler has failed. GPS is still performing self test.	
GN	Doppler failure code	Doppler has failed but operator can use GPS to perform all navigation.	
Press the <b>DIM</b> button eight times	LCD display dims		
Press the <b>BRT</b> button eight times	LCD display brightens		
Press the <b>DIM</b> button three times	LCD display dims		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Download Data from the PCMCIA Data Transfer Device			
Set the CDU <b>MODE</b> selector to <b>OFF</b>			
Insert the preprogrammed data loader cartridge			
Set the CDU <b>MODE</b> selector to <b>LAT/LONG</b>			
Set <b>DISPLAY</b> selector to <b>GS/TK/NAV M</b>	The display is similar to below: <b>00:</b> * <b>YR90</b> <b>GS: 162kt</b> <b>TK: 000° DTK: * °</b> <b>GPS: Y NAV: C more</b>		
Press <b>KYBD</b> key	On the display, the GPS mode of operation is blinking		
Press key <b>5</b>	On the display, the GPS mode of operation displays an <b>M</b> and is blinking		
Press <b>ENT</b> key	The entire display blanks out for less than one second and the GPS field now indicates <b>M</b>		
Set the CDU <b>DISPLAY</b> selector to <b>WIND-UTC/DATA</b>	The display is similar to below: <b>00:</b> * <b>YR90</b> <b>WIND</b> <b>SP:***kt</b> <b>DIR:***° more</b>		
Press the <b>ENT</b> key twice	The display indicates: <b>1&gt;STATUS</b> <b>2&gt;DATA LOAD</b> <b>3&gt; DAFIF DOWNLOAD</b> <b>4&gt; CONFIG end</b>		
Press key <b>3</b>	display indicates: <b>START DAFIF</b> <b>DOWNLOAD? NO</b>		
Press <b>KYBD, 9, ENT</b>	The display indicates: <b>LOADING DAFIF...</b> <b>CANCEL? NO</b> <b>INITIALIZING...</b> Display then indicates: <b>LOADING DAFIF...</b> <b>CANCEL?NO</b> <b>IN PROGRESS</b> <b>% COMPLETED:</b> Once percent completed reaches 100, the display indicates: <b>DAFIF DOWNLOAD</b> <b>COMPLETED</b> <b>SUCCESSFULLY</b> <b>ok?</b>		
Press <b>ENT</b>	The display indicates: <b>EN</b>		
Press <b>KYBD</b>	display indicates: <b>START DAFIF</b> <b>DOWNLOAD? NO</b>		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press <b>ENT</b>	The display indicates: 1>STATUS 2>DATA LOAD 3>DAFIF DOWNLOAD 4>CONFIG <b>end</b>		
Press <b>ENT</b>	The display is similar to below: 00: * YR90 WIND SP:000kt DIR:193° <b>more</b>		
Set the CDU <b>MODE</b> selector to <b>OFF</b>			
Remove the data cartridge			
Review Information for a Waypoint and an Instrument Approach Procedure			
Set <b>MODE</b> selector to <b>LAT/LONG</b>			
Set <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b>	Display shows: 1> FLIGHT PLAN 2> WP LOOKUP 3> IAP LOOKUP 4> RT CONSEC <b>more</b>		
Press <b>2</b>	Display shows: GET WP: TYPE: IDEN: 1> GET TYPE <b>kybd</b>		
Press <b>KYBD, 1</b>	Display shows: GET WP: TYPE: ARPT IDEN: 1> GET TYPE <b>kybd</b>		
Press <b>KYBD</b>	First character of <b>IDEN</b> blinks		
Press <b>LTR MID, 4, LTR LEFT, 2, LTR RIGHT, 1, LTR RIGHT, 7, ENT</b>  Press <b>ENT</b>	Display shows: GET WP: TYPE: ARPT IDEN: KDCU 1> GET TYPE <b>ok?</b> Display shows: <b>SEARCHING ...</b> Display then shows: Display shows something similar to below: <b>ARPT: KDCU</b> <b>*. nm 300°</b> <b>N 34° 39.16'</b> <b>W086° 56.72' more</b>		
Press <b>ENT</b>	Display shows something similar to below: <b>ARPT: KDCU</b> <b>PRYOR FLD RGNL</b> <b>United States</b> <b>ELEV 592ft end</b>		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press CLR	Display shows: 1> FLIGHT PLAN 2> WP LOOKUP 3> IAP LOOKUP 4> RT CONSEC more		
Press 3	Display shows: IAP DESTINATION TYPE: ARPT IDEN: 1> GET TYPE		
Press KYBD, KYBD, LTR LEFT, 2, LTR MID, 3, LTR MID, 5, ENT	Display shows: IAP DESTINATION TYPE: ARPT IDEN: DHN 1> GET TYPE ok?		
Press ENT	Display shows: SEARCHING ... Display then shows: 1> RNAV (GPS) RW14 2> RNAV (GPS) RW18 3> GPS-A OVERLAY end		
Press 2	Display shows: SEARCHING ... Display then shows: 1> IKIQU 2> OWURA 3> UMELY end		
Press 1  Press ENT	Display shows: PROCESSING APPROACH ... Display then shows: ARPT: DHN RNAV (GPS) RW18 IAF: IKIQU LENGTH: 06 more  Display shows: IKIQU TO UMELY IAF IAP WP 01 093° 5.0nm 1> LOAD IAP more		
Press INC(+)	Display shows: UMEY TO WAPCE IAP WP FAF 02 183° 5.0nm 1> LOAD IAP more		
Press INC(+)	Display shows: WAPCE TO R0031 FAF MAP 03 183° 4.9nm 1> LOAD IAP more		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press INC(+)	Display shows: R0031 TO QEDLU MAP IAP WP 04 183° 3.0nm 1> LOAD IAP more		
Press INC(+)	Display shows: QEDLU TO OALDY IAP WP IAP WP 05 129° 17.5nm 1> LOAD IAP more		
Press INC(+)	OALDY TO ***** IAP WP 06 ---° ---nm 1> LOAD IAP more		
Press CLR twice	Display shows: 1> FLIGHT PLAN 2> WP LOOKUP 3> IAP LOOKUP 4> RT CONSEC more		
Press ENT	Display is similar to below: 00: * YR90  WGS-84 DATUM: 47 end  Displays current Datum entered		
Verification of HSI Mode Select Panel			
Turn VOR system to ON and tune it to a local VOR Station or to a VOR test set	GO		
Set MODE selector to TEST	Display will be similar to: Vx: +147km/h Vy: +130 km/h Vz: +047 km/h A/D: 135° km/h DB: P RS-232: P 0000 more		
Press ENT twice	Display will be similar to:  OBS: XXX.X FAIL more		
Copilot – Push DOPPLER and CPLT on Mode Select Panel	DOPPLER lights on copilot's mode select panel  Display on the CDU will be similar to: OBS: XXX.X PASS more		
Pilot – Push DOPPLER on Mode Select Panel	DOPPLER lights on pilot's mode select panel  Display on the CDU will be similar to: OBS: XXX.X PASS more		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Copilot – Push <b>PLT/CPLT</b> on CoPilots Mode Select Panel	<b>CPLT</b> lights on both mode select panels  OBS angle on the CDU matches the course selection on the copilot's HSI.		
Pilot – Change course heading on the HSI	OBS angle on the CDU matches the course selection on the copilot's HSI.		
Pilot – Push <b>PLT/CPLT</b> on Pilot Mode Select Panel	<b>PLT</b> lights on both mode select panels  OBS angle on the CDU matches the course selection on the pilot's HSI.		
Copilot – Change course heading on the HSI	OBS angle on the CDU matches the course selection on the pilot's HSI.		
Pilot – Change the course selection every 10° starting from 000° and ending at 350°	OBS angle on the CDU matches the course selection on the pilot's HSI.	Course Selection	OBS Angle
		00°	
		10°	
		20°	
		30°	
		40°	
		50°	
		60°	
		70°	
		80°	
		90°	
		100°	
		110°	
		120°	
		130°	
		140°	
		150°	
		160°	
		170°	
		180°	
		190°	
		200°	
		210°	
		220°	
		230°	
		240°	
		250°	
		260°	
		270°	
		280°	
		290°	
		300°	
		310°	
		320°	
		330°	
		340°	
		350°	

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Copilot – Push <b>PLT/CPLT</b> on Mode Select Panel	<b>CPLT</b> lights on both mode select panels  OBS angle on the CDU matches the course selection on the copilot's HSI.		
Copilot – Change the course selection every 10° starting from 000° and ending at 350°	OBS angle on the CDU matches the course selection on the pilot's HSI.	Course Selection	OBS Angle
		00°	
		10°	
		20°	
		30°	
		40°	
		50°	
		60°	
		70°	
		80°	
		90°	
		100°	
		110°	
		120°	
		130°	
		140°	
		150°	
		160°	
		170°	
		180°	
		190°	
		200°	
		210°	
		220°	
		230°	
		240°	
		250°	
		260°	
		270°	
		280°	
		290°	
		300°	
		310°	
		320°	
		330°	
		340°	
		350°	
		360°	
Test Complete			

- b. After a successful Performance Test, turn off battery switch and disconnect aircraft battery.
- c. Annotate Aircraft Logbook with the following: If AN/ASN-128D is installed, a circled - red X A/C restricted from use of GPS for civil airspace instrument flight.
- d. Annotate Aircraft Logbook with a second entry with the following: If AN/ASN-128D is installed, a red dash Functional Flight Test of GPS non precision approach during Visual Meteorological Conditions (VMC) is due.

- e. Annotate Aircraft Logbook with a third entry with the following: Upon receipt of aircraft the receiving unit must verify the ability to track in Y mode.

#### 15. CALIBRATION REQUIREMENTS.

All TMDE used for continuity and bonding check must have a current DA Label 80.

#### 16. WEIGHT AND BALANCE DATA Reference Document Number A241732D005

A current DD Form 365-4 (Weight and Balance Clearance Form F) that reflects the subject installation must be executed and be on file per AR 95-1.

- a. Make entries on DD Form 365-1 (Chart A) and DD Form 365-3 (Chart C), in accordance with TM 55-1500-342-23, as indicated below.

- (1) Chart A. Items that are removed, when using AWBS, unselect "In A/C" and follow the software instructions.

ITEM NO.	NOMENCLATURE	WEIGHT	ARM	MOM/1000
A-XXX	SIGNAL DATA CONVERTER W/CLAMP P/N CV-3338B/ASN-128B	12	177	2.1

- (2) Chart A. Items that are installed, when using AWBS, make entries in the appropriate compartments as shown below. Enter new item numbers as required. Select "IN AIRCRAFT" only after item(s) are actually installed.

ITEM NO.	NOMENCLATURE	WEIGHT	ARM	MOM/1000
A-XXX	SIGNAL DATA CONVERTER P/N CV-3338B/ASN-128D	11	177	1.9

- (3) Chart C. Make entries for items added/removed as shown below. When using AWBS, select "IN AIRCRAFT" status on the Chart A to add and remove the items from the Chart C.

ITEM NO.	IN/OUT	NOMENCLATURE	WEIGHT	ARM	MOM/1000
A-XXX	OUT	SIGNAL DATA CONVERTER W/CLAMP P/N CV-3338B/ASN-128B	12	177	2.1
A-XXX	IN	SIGNAL DATA CONVERTER P/N CV-3338B/ASN-128D	11	177	1.9
	IN	ASN-128D WIRING HARNESS KIT INSTALL P/N 1005442-10	7	186	1.3
	IN	ASN-128D ANNUNCIATOR P/N LED-40-18-KG-31936, -31937, - 31938	1	206	0.2

#### 17. QUALITY ASSURANCE.

As determined by Quality Assurance Personnel at the site.

#### 18. RECORDING AND REPORTING OF THIS MODIFICATION.

- a. Record the modification on Aircraft DA Form 2408-5, Equipment Modification Record, DA Form 2408-13, Aircraft Status Information Record, and DA Form 2408-13-1, Aircraft Inspection and Maintenance Record, as indicated in DA Pam 738-751.

- b. Completion of DA Form 2407/5504: Reporting of this MWO application will be accomplished as required by DA Pam 738-751 after completing the DA Form 2407/5504.
- c. If CFT completes the work either on site or at a remote location the NMP copy (copy 2) will be forwarded to and retained by the project officer of the applicable OLR site.
- d. If the work is completed by other than a CFT, i.e., Depot, equipment user organization, etc. the NMP copy (copy 2) will be forwarded to: CDR, AMCOM, ATTN: AMSAM-MMC-RE-FM, Redstone Arsenal, AL 35989-5000.
- e. Ensure DA Form 2408-17 has proper serial number, lot number, and expiration dates recorded.
- f. SDC battery to be replaced 180 days after installation.

**19. MATERIAL CHANGE (MC) NUMBER.**

This MWO is authorized by ECP AV-10295.

**20. MODIFICATION IDENTIFICATION.**

This modification to the UH-60A/L helicopter incorporates the Doppler GPS Navigational Set upgrade. Incorporation can be verified by physically inspecting for the presence of the components mentioned above.

<b>CAUTION</b>
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**ONLY accomplish the next two sections, if an AN/ASN-128D Signal Data Converter is not available.**

**21. INSTALLATION OF AN AN/ASN-128B SIGNAL DATA CONVERTER (SDC) INTO A P3I MODIFIED UH-60A/L HELICOPTER**

- a. An AN/ASN-128B SDC can be installed in place of an AN/ASN-128D SDC. All connectors will mate properly, except on the AN/ASN-128B there is no J8 plug.
- b. Attach connector J8 to existing DG using clamp (MS21919WDG-16).
- c. Install the pin filter adapters (pn 9842-21-900423-018 for connector J1, pn 9718-21-900423-078 for connector J2, and pn 9840-21-900423-014 for connector J3) on the SDC before connecting the harness connectors.
- d. Control Display Unit
  - (1) Obtain Control Display Unit (pn CP-1252/ASN-128B) from cockpit center pedestal location.
  - (2) Obtain CD titled "Software Loader Verifier for DGNS ASN/128D Control Display Unit (CDU), Software Loading Cable (pn 1005472-10) and laptop.

**Note:** Any power down sleep feature on laptop should be disabled before software download.

**Note:** Should computer power be interrupted, this will interrupt SLV upload. Apply the following procedures if this event should occur:

- 1. Disconnect parallel cable at CDU (128B).
- 2. Reinstall aircraft serial plug at CDU (128B).
- 3. Apply power to aircraft.
- 4. Apply power to 128B CDU and set switch to NAV GS/TK
- 5. Power down CDU, RMVD data plug at CDU.
- 6. Power down ACFT.
- 7. Reconnect laptop and software harness to CDU.
- 8. Open SLV program.
- 9. Load software files successfully.

- (3) Install Control Display Unit into existing center pedestal location, connecting only cables W3P1 to J1 and W3P2 to J2. Do not screw into the center pedestal.
  - (4) Connect Software Loading Cable connector labeled "To CDU J3 connector" to CDU J3 connector
  - (5) Connect Software Loading Cable connector labeled "To computer COM1 port" into the COM1 port of the laptop
  - (6) Turn on laptop
  - (7) Insert CD.
  - (8) Select CDU from Available Targets.
  - (9) Press begin operation.
  - (10) Select Load OFP and WMM from the SLV Loader Options
  - (11) When prompted, set CDU MODE selector to LAT/LONG (NOTE: during the loading process, the CDU MAL light will illuminate)
  - (12) Wait until the SLV reports that loading has completed. Verify that the checksum for each file loaded is as follows:

H399A988.TK1	0x84C254D5
H399A988.TK2	0x959B5E0E
H399A988.TK3	0x2459A8E3
WMM.TK3	0x5DF4A279
  - (14) Turn CDU MODE selector to OFF
  - (15) Shut down laptop
  - (16) Remove Software Loading Cable from the laptop
  - (17) Remove Software Loading Cable from the CDU
  - (18) Connect Cable (W01-P700R) to CDU J3
  - (19) On the CDU, set MODE selector to TEST (EN will appear on the display)
  - (20) On the CDU, press KYBD, then set MODE selector to OFF
  - (21) Set the MODE selector to TEST
  - (22) After 15 seconds, verify the CDU display shows GO ALL, DB:P, and RS-232:P
  - (23) On CDU, set MODE selector to OFF
  - (24) Finish installation of the Control Display Unit
- e. If the AN/ASN-128B is installed, annotate Aircraft Logbook with a circled-red X A/C restricted from use of GPS for civil airspace flight.

## 22. PERFORMANCE TESTS WITH THE AN/ASN-128B DGNS SYSTEM

- a. These performance tests are to be accomplished with a Signal Data Converter AN/ASN-128B and Control Display Unit with software loaded for the AN/ASN-128B system.
- b. Test Description  
Power the helicopter under test and perform functional and operational tests in accordance with established technical manual procedures.
- c. Test Objectives  
To verify that the DGNS can be powered-up, is functioning normally, and is operational.
- d. Success Criteria  
The DGNS system is installed correctly and operates properly when supplied by normal aircraft electrical power sources.  
Confirm that the DGNS performs its Built-In Test (BIT) self test capability and confirms that the DGNS is operating correctly.
- e. Assumptions and Constraints  
All measuring and test equipment have been properly calibrated and are current in accordance with MIL-STD-1839A, *Calibration and Measurement Requirements*, and TB 750-25, *Army Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Repair Support (C&RS) Program*.
- f. Test Setup  
Apply external power to the helicopter under test.  
  
Ensure a Data Transfer Module is available for use.
- g. Test Procedure  
Perform the Operational Assessment as detailed below. This is a combined version of Section III, paragraph 3.17A.9, *General Operating Procedures for Entering Data* and paragraph 3.17A.10, *Preflight Procedures*, of TM 1-1520-237-10, *Operators Manual for UH-60A, UH-60L, and EH-60A Helicopters*, dated 31 Oct 96, with change 10, dated 30 Sept 02, Interim Change 02, dated 27 Dec 02.  
  
Record the test results in the following data collection/record sheet titled Operational Assessment of Current DGNS System. Comments and observations may also be written on these sheets or on accompanying pages. Bold-Face type is used in the test procedure to indicate labeled or displayed items.

**DATA COLLECTION/RECORD SHEET**  
**Operational Assessment of the AN/ASN-128B**

Test Performed By \_\_\_\_\_ of \_\_\_\_\_

Date Performed \_\_\_\_\_

With power applied, perform the following operational assessment. For each test step in the test results verification space enter "P" for Passed, "F" for Failed, "✓" for step or check completed, or NA for not applicable followed by the tester's initials. For any failed tests, a problem report will be generated.

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Enter UTC time			
Set <b>DISPLAY</b> selector to <b>WIND-UTC/DATA, MODE</b> to <b>LAT/LONG</b>	Display Indicates: <b>SELECT GPS MODE M OR Y</b>		
Press <b>5</b>	The display indicates: <b>SP: * Kn</b> <b>DIR: * °</b>		
Press <b>ENT</b> key	CDU indicates year ** (default is 93), day 317 and indicates hours, minutes, and seconds of UTC time		
Press <b>KYBD</b> key	CDU-displayed year is blinking		
Enter current year	CDU-displayed year has changed to the current year		
Press <b>KYBD</b> key	CDU-displayed day is blinking		
Enter current day	CDU-displayed day has changed to day entered		
Press <b>KYBD</b> key	CDU-displayed hours is blinking		
Enter current hours	CDU-displayed hours has changed to the hour entered		
Enter current minutes	CDU-displayed minutes has changed to the minutes entered		
Enter current seconds	CDU-displayed seconds has changed to the seconds entered		
Press <b>ENT</b> key twice	The display indicates: <b>1&gt;SEA CURRENT</b> <b>2&gt;SURFACE WIND</b> <b>3&gt;GPS STATUS</b> <b>4&gt;DATA LOAD end</b>		
Press key <b>3</b>	The display indicates the GPS test mode status as one of the following: <b>GPS TEST: IN PROGRESS</b> <b>GPS TEST: NOT RUN</b> <b>GPS TEST: PASSED</b> <b>GPS TEST: FAILED</b>		
Set <b>DISPLAY</b> selector to <b>XTK/TKE/KEY</b>	The display indicates GPS daily key status, time remaining on the currently entered keys, and how many satellites are currently being used by the GPS (See chart below for possible key/status combinations)		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
GPS Key/Status Combinations			
Key	Status	Time	Remarks
DK	OK	Days or Hours still available on the key	GPS daily key in use and verified
DK	NO	*	No GPS daily key available
DK	IN	*	GPS daily key available but not verified
Enter GPS Mode "M"			
Set <b>MODE</b> selector to <b>LAT/LONG</b>			
Set <b>DISPLAY</b> selector to <b>GS/TK/NAV M</b>	The display indicates the current GPS and navigation mode on the top line: (a) Selected fly to waypoint. (b) EPE (GPS estimated position error in meters). (c) GPS mode of operation: <b>M</b> for mixed <b>C/A</b> and <b>P/Y</b> code GPS reception. <b>Y</b> for only <b>Y</b> code GPS reception. (d) DGNS mode of operation (e) Target destination where the present position will be stored next time <b>TGT/STR</b> is pressed.		
Press <b>KYBD</b> key	On the display, the GPS mode of operation is blinking		
Press <b>LTR LEFT</b> followed by key <b>5</b>	On the display, the GPS mode of operation displays an "M" and is blinking.		
Press <b>ENT</b> key	The entire display blanks out for less than one second and the center display will now indicates <b>M</b> .		
Perform Self Test			
Set <b>MODE</b> selector to <b>GPS LDG</b>			

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Set <b>DISPLAY</b> selector to <b>GS/TK/NAV M</b>	The display indicates the current GPS and navigation mode on the top line: (a) Selected fly to waypoint. (b) EPE (GPS estimated position error in meters). (c) GPS mode of operation: <b>M</b> for mixed <b>C/A</b> and <b>P/Y</b> code GPS reception. <b>Y</b> for only <b>Y</b> code GPS reception. (d) DGNS mode of operation (e) Target destination where the present position will be stored next time <b>TGT/STR</b> is pressed.		
Press <b>KYBD</b> key	On the display, the GPS mode of operation is blinking		
Press <b>LTR LEFT</b> followed by key <b>5</b>	On the display, the GPS mode of operation displays <b>M</b> and is blinking		
Press <b>ENT</b> key	The entire display blanks out for less than one second and the center display will now indicate <b>M</b>		
Set <b>MODE</b> selector to <b>LAMP TEST</b>	All edge lighting illuminates The MAL lamp illuminates		
Set <b>MODE</b> selector to <b>TEST</b>	After Doppler and/or GPS self tests have completed (approximately 15 seconds for Doppler, up to 2 minutes for GPS), one of the following displays is observed in the left and right displays (See chart below for possible test results) (See Note G)		
Self Test Results			
Left Display	Right Display	Remarks	
GO		Doppler has completed BIT and is operating satisfactorily, GPS is still performing BIT (GPS has a two minute BIT cycle maximum). Note that a rotating bar in the display indicates that the GPS is still performing self test.	
GO	ALL	The entire system has completed BIT and is operating satisfactorily.	
GO	P	Pitch or Roll data is missing or exceeds 90°. In this case, pitch and roll in the computer are both set to zero and navigation in the Doppler mode continues with degraded operation. Problem may be in the vertical gyro or aircraft cabling	
NG	<b>C, R, S, or H</b> followed by a numeric code	A failure has occurred in the computer display unit or the signal data converter power supply. The operator should not use the system	
DN	GPS failure code	GPS has failed, but operator can use Doppler to perform all navigation	
DF	Doppler failure code	Doppler has failed. GPS is still performing self test	
GN	Doppler failure code	Doppler has failed but operator can use GPS to perform all navigation	
Press the <b>DIM</b> button ten times	LCD display dims		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press the <b>BRT</b> button ten times	LCD display brightens		
Enter Datum and Destination in MGRS			
Set the <b>MODE</b> selector to <b>MGRS</b> position			
Set the <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b> Press the <b>KYBD</b> key			
Press <b>2, 5, ENT</b>	The display shows <b>DATUM: 25</b>		
Set the <b>DISPLAY</b> selector to <b>WP/TGT</b>	If no data, displays stars, *****...		
Press <b>2, 0</b>	The destination number changes to <b>20</b>		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Zone field blinks		
Press <b>1, 8, LTR MID, 7</b>	<b>18T</b> appears in the Zone field		
Press the <b>KYBD</b> key	Area and northing/easting blinks		
Press <b>LTR MID, 8, LTR MID, 5, KYBD, 5, 0, 0, 0, 6, 0, 0, 0</b>	<b>WN5000 6000</b> appears in the area and northing/easting fields		
Press the <b>KYBD</b> key	Location Name/ICAO blinks		
Press <b>LTR MID, 1, LTR LEFT, 1, LTR MID, 5, LTR LEFT, 2, LTR RIGHT, 5</b>	<b>BANDO</b> appears in the Location/ICAO field		
Press <b>ENT</b>	Zone, area, easting/northing coordinates, destination number, and location name/ICAO are displayed		
Press <b>ENT</b>	Display shows glide slope, IAC, ALT, and V		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Magnetic Variation Field (V: ) blinks		
Enter <b>E, 0, 0, 1, 2</b>	Display shows <b>V:E001.2</b> (V: cannot be entered for waypoints with target motion)		
Press the <b>KYBD</b> key	Glide Slope field blinks		
Press <b>8</b>	Glide slope field changes to <b>8°</b>		
Press the <b>KYBD</b> key	IAC (Initial Approach Course) field blinks		
Press <b>2, 7, 0</b>	IAC field changes to <b>270°</b>		
Press the <b>KYBD</b> key	ALT field blinks		
Press the <b>INC (+)</b> key	ALT field shows + (positive altitude)		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press 2, 3, 0	ALT field changes to <b>230 meters</b> (leading zeros may be omitted)		
Press ENT	Glide slope, IAC, ALT, and V are displayed		
Press ENT	Display shows target motion and direction		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Speed field blinks		
Press 0, 4, 0 ( <i>no blank fields</i> )	Speed field changes to <b>040</b>		
Press the <b>KYBD</b> key	Direction field blinks		
Press 1, 2, 8 ( <i>no blank fields</i> )	Direction field changes to <b>128°</b>		
Press ENT	Target motion and direction are displayed		
Set the <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b>			
Press the <b>KYBD</b> key			
Press <b>LTR RIGHT, 6, LTR LEFT, 2, LTR MID, 8, ENT</b>	Display shows <b>DATUM: RDW</b>		
Set <b>DISPLAY</b> selector to <b>WP/TGT</b>	If no data, displays stars, <b>*****...</b>		
Press 0, 0	The destination number changes to <b>00</b>		
Press <b>INC(+)</b>	Verify the waypoints match the data from the Data Transfer Module		
Press <b>INC(+)</b>	Verify the waypoints have been erased		
<b>Enter Datum and Destination in LAT/LONG</b>			
Set the <b>MODE</b> selector to <b>LAT/LONG</b> position			
Set the <b>DISPLAY</b> selector to <b>DATUM/ROUTE</b>			
Press the <b>KYBD</b> key			
Press 4, 7, ENT	The display shows <b>DATUM: 47</b>		
Set the <b>DISPLAY</b> selector to <b>WP/TGT</b>	If no data, displays stars <b>*****...</b>		
Press 2, 5	The destination number will change to <b>25</b>		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Latitude field blinks		
Press <b>N, 4, 1, 1, 0, 1, 3</b>	<b>N41° 10.13</b> appears in the Latitude field		
Press the <b>KYBD</b> key	Longitude field blinks		

TEST/OPERATION	NORMAL INDICATION	PASS	FAIL
Press E, 0, 3, 5, 5, 0, 2, 7	E035° 50.27 appears in the longitude field		
Press the <b>KYBD</b> key	Location Name/ICAO blinks		
Press <b>LTR MID, 1, LTR LEFT, 1, LTR MID, 5, LTR LEFT, 2, LTR RIGHT, 5</b>	<b>BANDO</b> appears in the Location/ICAO field		
Press <b>ENT</b>	Display shows: N41° 10.13 E035° 50.27		
Press <b>ENT</b>	Display shows glide slope, IAC, ALT, and V		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	Magnetic Variation Field (V: ) blinks		
Enter E, 0, 0, 1, 2	Display shows V:E001.2 (V: cannot be entered for waypoints with target motion)		
Press the <b>KYBD</b> key	Glide Slope field blinks		
Press 8	Glide slope field changes to 8°		
Press the <b>KYBD</b> key	IAC field blinks		
Press 2, 7, 0 (no blank fields)	IAC field changes to 270°		
Press the <b>KYBD</b> key	ALT field blinks		
Press the <b>INC (+)</b> key	ALT field shows + (positive altitude)		
Press 6, 5, 0	ALT field changes to 650		
Press <b>ENT</b>	Glide slope, IAC, ALT, and V are displayed		
Press <b>ENT</b>	Display shows target motion and direction		
Press the <b>KYBD</b> key	<b>kybd</b> is displayed in the bottom right corner of the display; destination number blinks		
Press the <b>KYBD</b> key	speed field blinks		
Press 0, 4, 0 (no blank fields)	Speed field changes to 040		
Press the <b>KYBD</b> key	Direction field blinks		
Press 1, 2, 8 (no blank fields)	Direction field changes to 128°		
Press <b>ENT</b>	Target motion and direction are displayed		
Set <b>MODE</b> selector to <b>OFF</b> (Test Complete)	Performs proper shut-down		

**Notes:**

- B. Data Entry. To display a letter, first press the **LTR** key corresponding to the position of the desired letter on a key. Then press the key that contains the desired letter. For example, to enter an **L**, first press the **LTR RIGHT** key, then press key **4**.

- C. **Keyboard Correction Capability.** The last character entered may be cleared by pressing the **CLR** key. If the **CLR** key is pressed twice in succession, the field is cleared but remains under control (indicated by blinking) and the last valid data entered is displayed.
- D. **Magnetic Variation.** When in automatic magnetic variation mode, the system uses the programmed World Magnetic Model (WMM) to obtain variations. When in manual magnetic variation mode, the system uses the entered magnetic variation constant throughout the flight.
- E. **Impossibility of Entering Unacceptable Data.** In most cases the computer program will reject unacceptable data (for example, a **MGRS** area of **W1** does not exist and will be rejected). If the operator attempts to insert unacceptable data, the unacceptable data will be displayed on the panel and then the selected field will blink after **ENT** key is pressed displaying the last valid data.
- F. The Doppler radar outputs true heading and accepts magnetic heading from gyromagnetic heading reference. If accurate magnetic variations are not applied, navigation accuracy will be adversely affected.
- G. Select GPS mode **M** during initialization. If **Y** mode is selected before crypto-key variables are loaded, the system will not track space vehicles.
- H. In the event the **TEST** mode display is not **GO ALL**, the system should be recycled through **OFF** to verify the failure is a momentary one.
- I. If a transmission error occurs, the CDU display changes to **ERROR-RETRYING**

**APPENDIX A:****TO BE USED TO IDENTIFY INDIVIDUAL PARTS IN 1005477-10 AND 1005478-10**

1005477-10	Relay Bracket Installation		81996		1
	Mounting Bracket	**	81996	1005438-01	1
	Decal	**	81996	1005441-13	1
	Decal	**	81996	1005441-15	1
	Decal	**	81996	1005441-17	1
	Decal	**	81996	1005441-19	1
	Decal	**	81996	1005441-21	1
	Decal	**	81996	1005441-23	1
	Decal	**	81996	1005441-49	1
	Decal	**	81996	1005441-53	1
	Decal	**	81996	1005441-55	1
	Screw, Hex Head	5305-01-074-0162	80205	NAS1801-06-14	1
	Washer, Flat	5310-01-352-7382	80205	NAS1149DN632J	4
	Washer, Lock	5310-00-045-3296	81349	MS35338-41	2
	Nut, Hex	5310-00-934-9765	96906	MS35649-264	1
	Nut, Self-Locking	5310-00-807-1474	80205	MS21042L06	1
	Screw, Hex Head	5305-01-074-0162	80205	NAS1801-3-8	2
	Washer, Flat	5310-01-352-7382	80205	NAS1149D0332J	4
	Nut, Self-Locking	5310-00-807-1474	80205	MS21042L3	2
	Washer, Flat	5310-01-352-7382	80205	NAS1149DN432J	4
	Screw, Hex Head	5305-01-074-0162	80205	NAS1801-04-7	4
	Relay	5945-01-290-6629	81349	M83536/2-024M	1
	Relay	5945-01-396-0626	81349	M83536/6-022M	2
	Terminal Modular Block	5940-01-123-9170	11139	CTJ122E04A-513	4
	Terminal Modular Block	**	11139	CTJ122E01B-513	1
	Terminal Modular Block	**	11139	CTJ122E02C-513	1
	Metal Rail	5975-01-144-2329	11139	CTJ-3A-06-4021	1
	Flange Nut	5935-01-336-2435	81349	M85049/95-20A	1
	Wire, Electrical	6145-01-110-8894	81349	M22759/34-22-9	44ft
	Cable, Electrical	6145-01-152-7561	1P787	M27500-22SD2T23	7ft
	Cable, Electrical	6145-01-152-7566	1P787	M27500-22SD3T23	7ft
	Cable Marker	7690-01-348-4003	06090	CM-SCE-1/2-4H-9	5
	Connector	5935-01-032-6516	96906	MS27656T19B35P	1
	Socket, Relay	5935-01-317-9322	81349	M12883/44-01	2
	Socket, Relay	5935-01-309-6113	81349	M12883/45-01	1
	Shield Termination	5940-01-135-7086	81343	M83519/2-8	28
	Lug, Terminal	5940-00-191-2708	81349	M7928/1-13	3
	Plug, Sealing	5935-00-496-7171	96906	MS27488-20	1
	Contact, Electrical	5999-01-063-1868	81349	M39029/22-192	62
	Splice, Electrical	5940-00-271-7741	81343	M81824/1-2	3
1005478-10	Relay Bracket Installation		81996		1
	Mounting Bracket	**	81996	1005438-01	1
	Decal	**	81996	1005441-25	1
	Decal	**	81996	1005441-27	1
	Decal	**	81996	1005441-29	1
	Decal	**	81996	1005441-31	1
	Decal	**	81996	1005441-33	1
	Decal	**	81996	1005441-35	1
	Decal	**	81996	1005441-37	1
	Decal	**	81996	1005441-39	1
	Decal	**	81996	1005441-41	1

Decal	**	81996	1005441-43	1
Decal	**	81996	1005441-45	1
Decal	**	81996	1005441-47	1
Decal	**	81996	1005441-51	1
Decal	**	81996	1005441-57	1
Decal	**	81996	1005441-59	1
Decal	**	81996	1005441-61	1
Decal	**	81996	1005441-63	1
Decal	**	81996	1005441-65	1
Screw, Hex Head	5305-01-074-0162	80205	NAS1801-06-14	2
Washer, Flat	5310-01-352-7382	80205	NAS1149DN632J	12
Washer, Lock	5310-00-045-3296	81349	MS35338-41	4
Nut, Hex	5310-00-934-9765	96906	MS35649-264	2
Nut, Self-Locking	5310-00-807-1474	80205	MS21042L06	2
Screw, Hex Head	5305-01-074-0162	80205	NAS1801-3-8	2
Washer, Flat	5310-01-352-7382	80205	NAS1149D0332J	4
Nut, Self-Locking	5310-00-807-1474	80205	MS21042L3	2
Screw, Machine	5305-00-995-2125	80205	NAS600-6P	2
Washer, Flat	5310-01-352-7382	80205	NAS1149DN432J	6
Nut, Self-Locking	5310-00-807-1474	80205	MS21042L04	2
Screw, Hex Head	5305-01-074-0162	80205	NAS1801-04-7	4
Relay	5945-01-290-6629	81349	M83536/2-024M	3
Relay	5945-01-396-0626	81349	M83536/6-022M	2
Socket, Relay	5935-01-317-9322	81349	M12883/44-01	2
Socket, Relay	5935-01-309-6113	81349	M12883/45-01	3
Terminal Board Assembly	5940-00-950-1610	96906	MS27212-1-3-A	1
Cover Assembly	5940-01-493-6609	96906	MS18029-1S-3	1
Terminal Modular Block	5940-01-123-9170	11139	CTJ122E04A-513	1
Terminal Modular Block	**	11139	CTJ122E01B-513	1
Terminal Modular Block	**	11139	CTJ122E02C-513	1
Terminal Modular Block	**	11139	CTJ122E03D-513	1
Metal Rail	5975-01-363-5690	11139	CTJ-3A-04-4021	1
Nut, Hex	5310-00-934-9761	96906	MS35649-264	3
Washer, Lock	5310-00-045-4007	80205	MS35338-41	3
Flange Nut	5935-01-336-2435	81349	M85049/95-20A	1
End Insulator	5970-00-426-1583	96906	MS3373-A1	2
Wire, Electrical	6145-01-110-8894	81349	M22759/34-22-9	29ft
Cable, Electrical	6145-01-152-5077	1P787	M27500-22SD1T23	6ft
Cable, Electrical	6145-01-152-7561	1P787	M27500-22SD2T23	8ft
Cable, Electrical	6145-01-152-7566	1P787	M27500-22SD3T23	5ft
Cable Marker	7690-01-348-4003	06090	CM-SCE-1/2-4H-9	7
Connector	5935-01-032-6516	96906	MS27656T19B35P	1
Shield Termination	5940-01-135-7085	81343	M83519/2-7	12
Shield Termination	5940-01-135-7086	81343	M83519/2-8	27
Sealing Plug	5935-00-496-7171	96906	MS27488-20	3
Sealing Plug	5935-00-351-5944	96906	MS27488-22	16
Lug, Terminal	5940-00-191-2708	81349	M7928/1-13	12
Contact, Electrical	5999-01-063-1868	81349	M39029/22-192	34
Resistor	5905-00-443-9283	81349	RNC60H5051BR	1
Resistor	5905-01-097-4629	81349	RNC60H10R0BR	1
Mount Assembly	1560-00-341-4525	05279	S4546804-501	2
Splice, Electrical	5940-00-271-7741	81343	M81824/1-2	3

## **APPENDIX B**



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SEE VIEW A  
(PLOT SIDE)

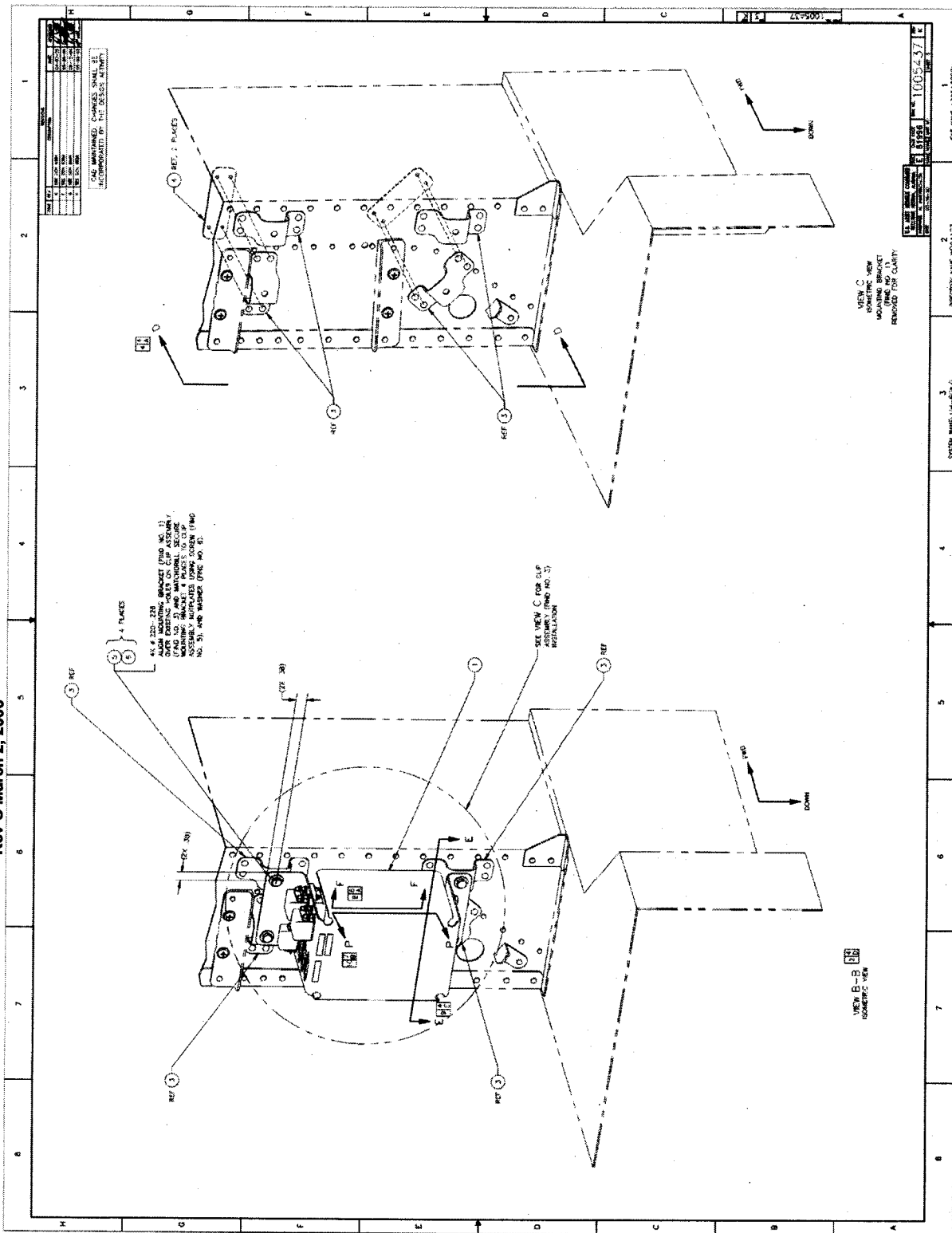
SEE VIEW C  
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SEE VIEW D  
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RELAY BRACKET INSTALLATION

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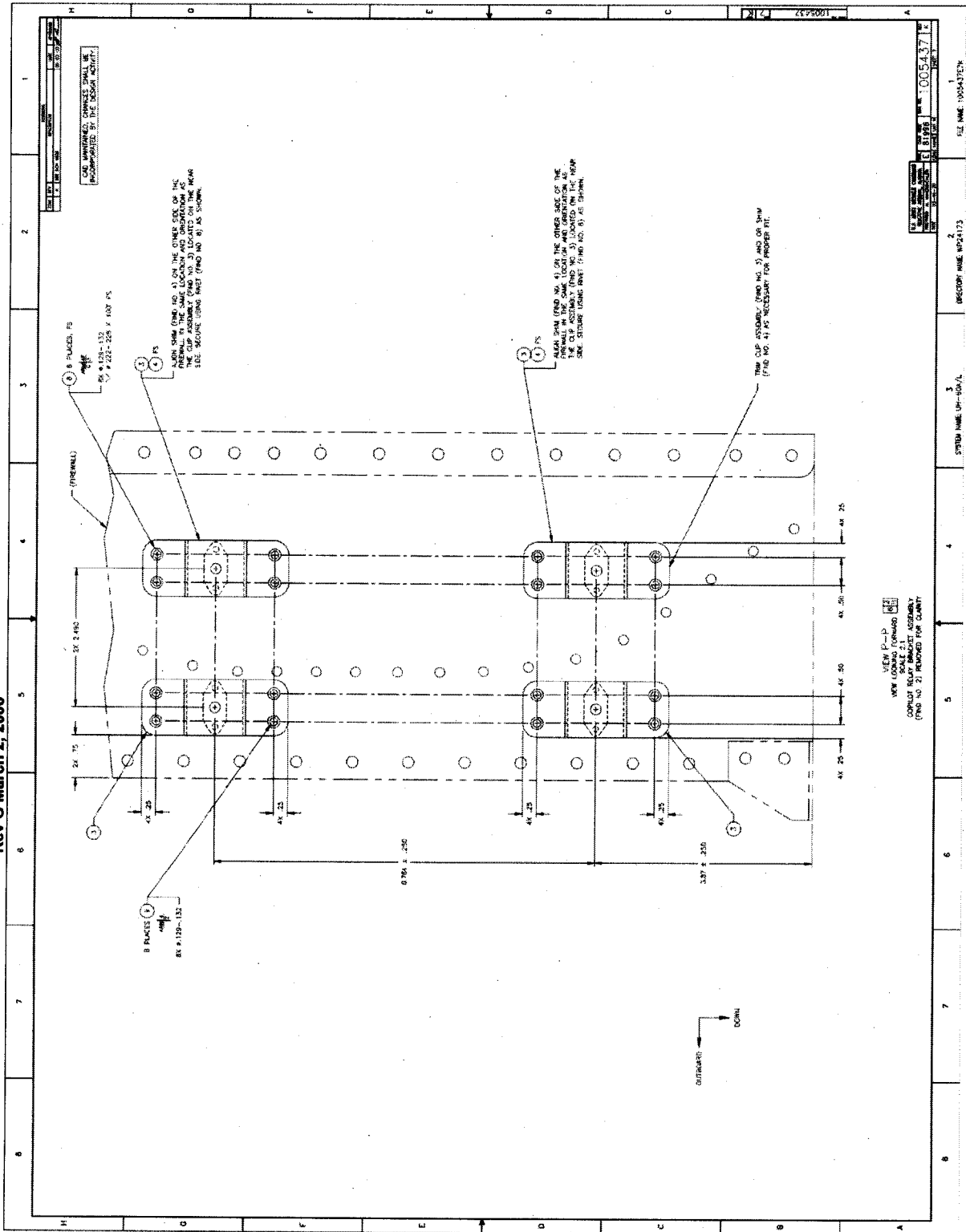


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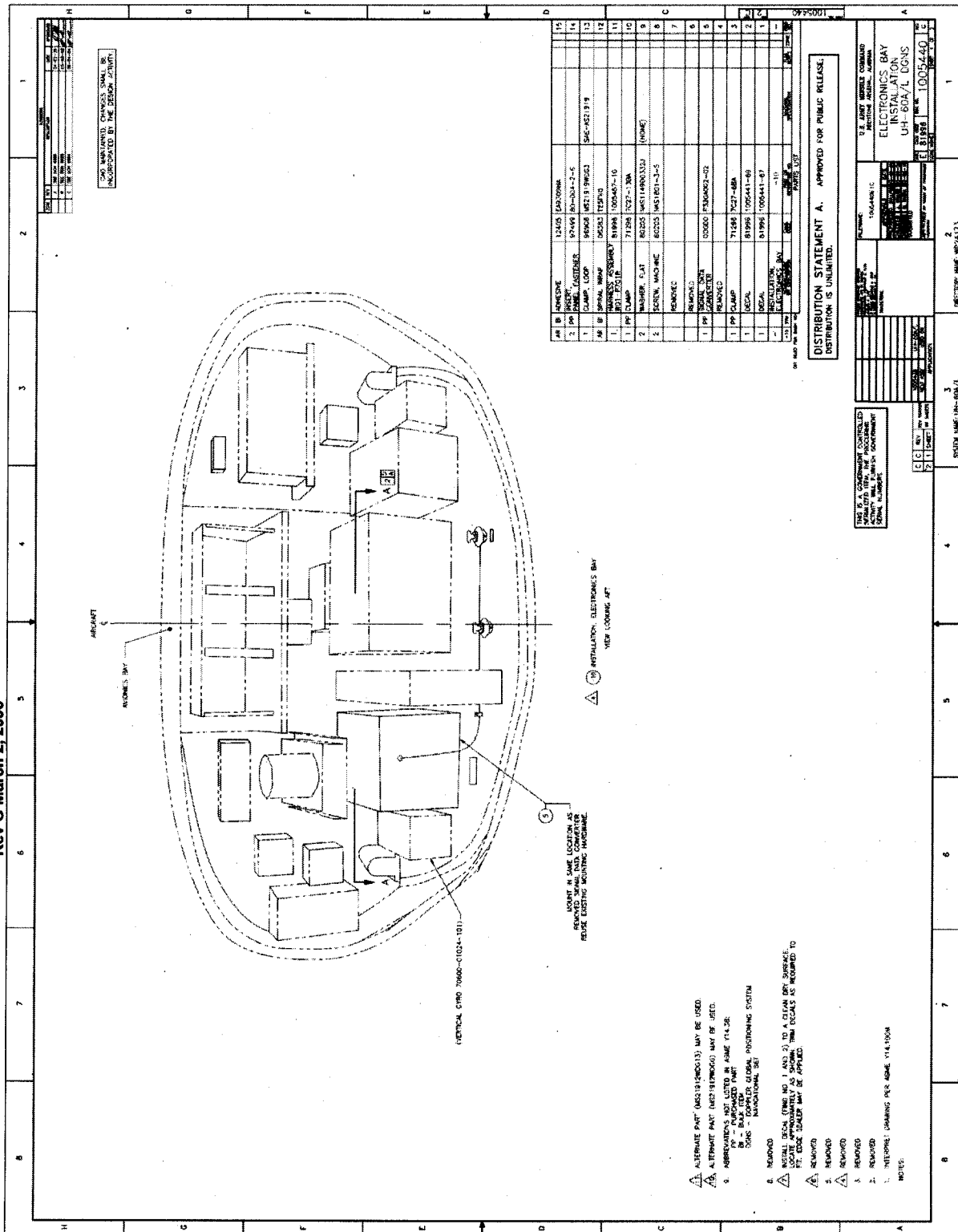
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Rev G March 2, 2006



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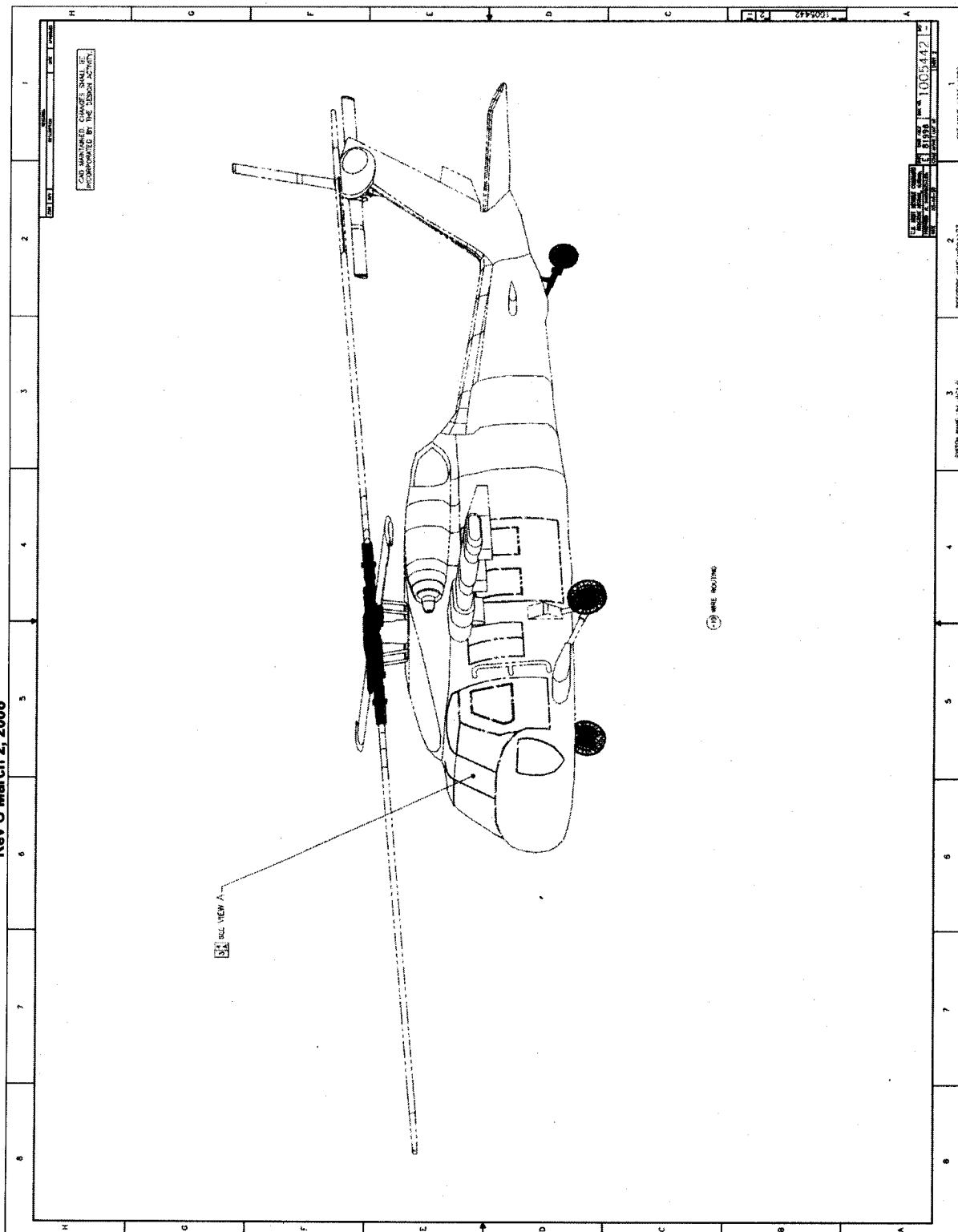
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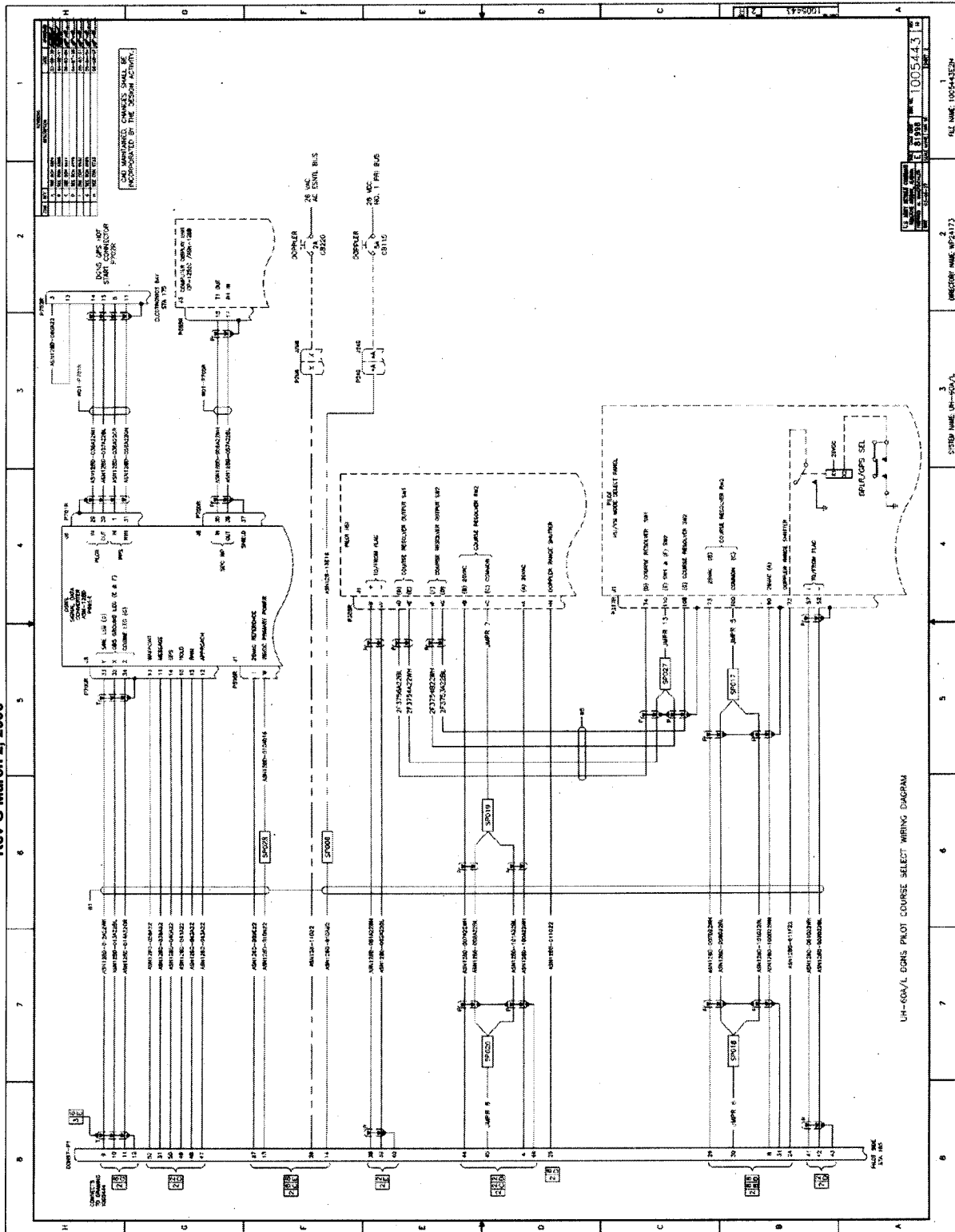
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Rev G March 2, 2006



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UH-60A/L DOWS PILOT COURSE SELECT WIRING DIAGRAM

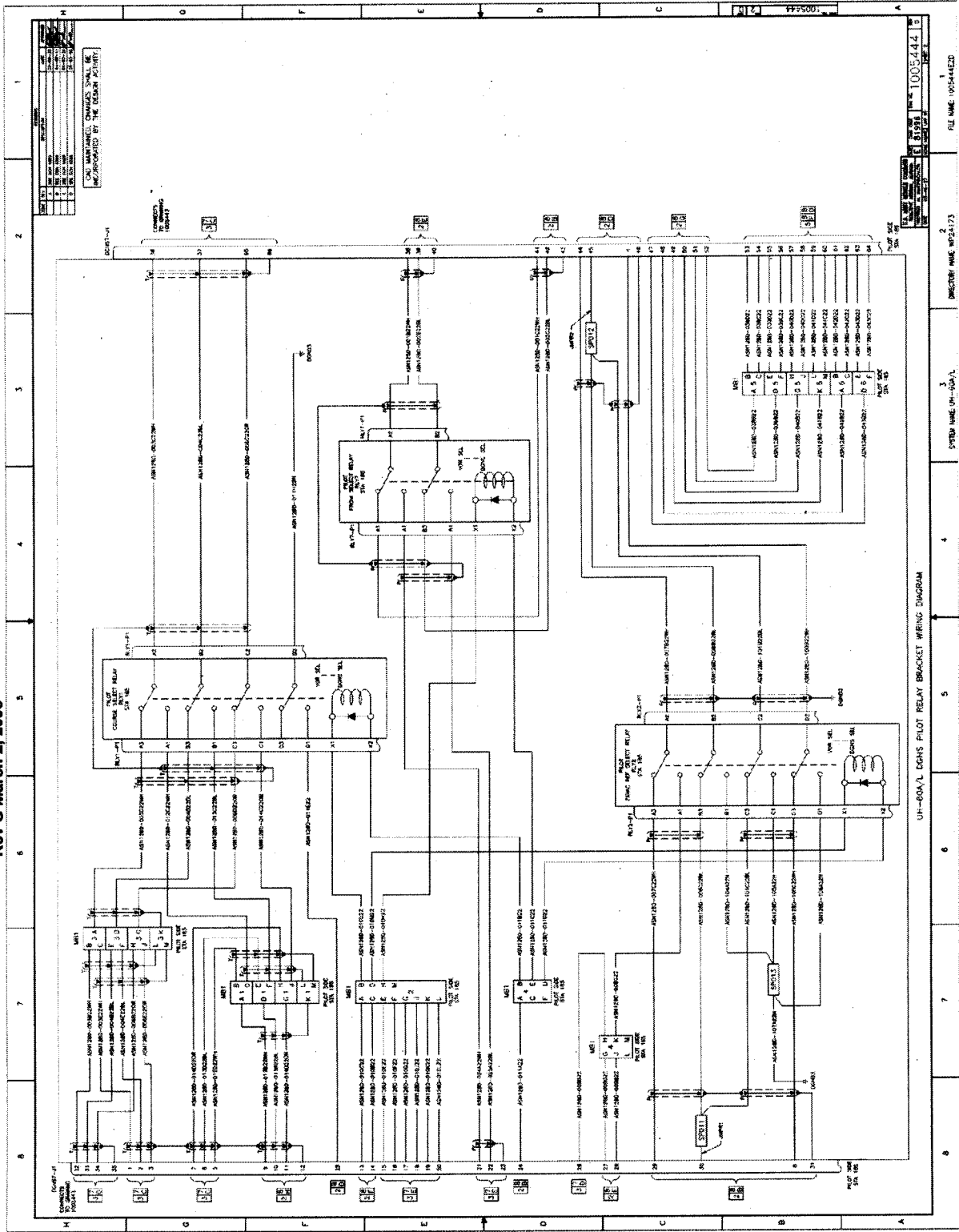
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**MWO 1-1520-237-50-92**  
**Rev G March 2, 2006**



UH-60X/L DGHs Pilot Relay Bracket Wiring Diagram  
 SYSTEM NAME: 100-444  
 PROJECT NAME: 100-444  
 FILE NAME: 100-444

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1  
ALL NAME: 1005444E3D

SECTION NAME: W024123  
2

**SYSTEM NAME: J-60-602A**

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WIRING DIAGRAM

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## **APPENDIX C**

**REFER TO ARINC DRAWING A241732D010  
CONTINUITY, GROUNDS, AND POWER  
WIRE INSTALL CHECKOUT PROCEDURES  
DGNS SYSTEM UH-60A/L**

**CONTINUITY, GROUNDS, AND POWER WIRE INSTALL CHECKOUT PROCEDURES;  
DGNS SYSTEM UH-60A/L  
Drawing Number: A241732D010**

**NOTES:**

1. Reference UH-60A/L DGNS System Interconnection Diagram drawing 1005443 Interconnection Diagram and UH-60A/L Relay Bracket Interconnection Diagram drawing 1005444.
2. Complete power source tests in accordance with drawing prior to connecting LRUs and applying ground support or aircraft power to equipment busses.
3. Conduct tests in the following sequence:
  - A. Continuity/Ground Test
  - B. Power Test
4. Continuity Test verifies the electrical continuity between terminations for each wire. Conduct continuity tests using Fluke 20/70 series DMM, or equivalent, and associated leads. Fail test if continuity resistance is greater than 1.5 ohms.
5. Ground Test verifies bonding between system components and aircraft structure ground. Conduct Ground Tests using Fluke 20/70 series DMM or equivalent. Fail test if resistance is greater than 0.5 ohms.
6. Power test verifies proper voltage and polarity at the contact. Conduct power test using a Fluke 20/70 series DMM or equivalent.
  - (1) 28 Vdc primary power, fail if voltage is greater than 30Vdc or less than 22Vdc.
  - (2) 26 Vac essential power, fail if voltage is greater than 18Vac
  - (3) 28 Vdc lamp power with dimmer set to full brightness.
7. An upper case character preceded by an asterisk designates a lower case character.
- ☒ Indexed note to specific test in the procedure. These notes are shown in the notes column.
- ☒ Make sure that the power is off and the circuit breakers are open when checking the continuity between the breaker load terminal and the connection hooked up to.
- ☒ If VOR Receiver AN/ARN-147(V) is installed, then the TPIN becomes the corresponding letters in parenthesis.
10. If necessary, reference TM 1-1520-237-23-5, Figure 9-2-10-2, Sheet 9 of 9.
11. Abbreviations not listed in ASME Y14.38:
  - CB- Circuit Breaker
  - FPIN – From Pin
  - ID – Interconnection Diagram
  - IR – Initial Release
  - TPIN – To Pin

**REFERENCE DESIGNATOR TO EQUIPMENT CROSS-REFERENCE TABLE**

<b>REF DES</b>	<b>EQUIPMENT NOMENCLATURE</b>	<b>LOCATION</b>
CB220	Circuit Breaker, Doppler	28 VAC Essential Bus
CB115	Circuit Breaker, Doppler	28 VDC NO. 1 Primary Bus
P687R-J1	Computer Display Unit	Center Pedestal
P688R-J3	Computer Display Unit	Center Pedestal
P695R	DGNS Signal Data Converter	Electronics Bay STA 175
P696R-J1	DGNS Signal Data Converter	Electronics Bay STA 175
P700R-J8	DGNS Signal Data Converter	Electronics Bay STA 175
P701R-J6	DGNS Signal Data Converter	Electronics Bay STA 175
P702R	DGNS GPS Hot Start Connector	Electronics Bay STA 175
P305R-J1	Pilot HSI	Pilot Instrument Panel
P317R-J1	Pilot HSI/VSI Mode Select Panel	Pilot Instrument Panel
P149R	VOR/ILS Receiver	Under Fwd Cntr Pedestal RT
P249/J249	26 VAC Essential Disconnect	BH Copilot CB Pnl STA 247
P266/J266	28 VDC Primary Disconnect	BH Pilot CB Pnl STA 247
DGNS7-P1	DGNS Pilot Relay Panel	Right Side STA 185
DGNS8-P1	DGNS Copilot Relay Panel	Left Side STA 185
P302R-J1	Copilot HSI	Copilot Instrument Panel
P300R-J1	Copilot HSI/VSI Mode Select Pnl	Copilot Instrument Panel
DGNS1-P1	MSG/WPT Indicator	Pilot Instrument Panel
DGNS2-P1	NO GPS/HOLD Indicator	Pilot Instrument Panel
DGNS3-P1	RAIM/APR Indicator	Pilot Instrument Panel
DGNS4-P1	MSG/WPT Indicator	Copilot Instrument Panel
DGNS5-P1	NO GPS/HOLD Indicator	Copilot Instrument Panel
DGNS6-P1	RAIM/APR Indicator	Copilot Instrument Panel
DGNS7-J1	DGNS Pilot Relay Panel	Right Side STA 185
DGNS8-J1	DGNS Copilot Relay Panel	Left Side STA 185
RLY1-P1	Pilot Course Select Relay	Right Side STA 185
RLY2-P1	Pilot 26 VAC Ref Select Relay	Right Side STA 185
RLY3-P1	Copilot Course Select Relay	Left Side STA 185
RLY4-P1	Copilot 26 VAC Ref Select Relay	Left Side STA 185
RLY5-P1	From Select Relay	Left Side STA 185
RLY6-P1	To Select Relay	Left Side STA 185
RLY7-P1	Pilot From Select Relay	Right Side STA 185
RLY8-P1	Copilot From Select Relay	Left Side STA 185
P149R	VOR/ILS Receiver	Under center pedestal, rt frnt.

## CONTINUITY AND GROUND CHECKS

Verify continuity between test points as follows:  
ID REF Interconnect Diagram 1005443 Sheets

FROM	FPIN	TO	TPIN	ID REF	NOTES	PASS/FAIL
Install Pilots and Copilots Relay Bracket Assemblies Do Not Install Relays						
P701R-J6	29	P702R	14	2		
P701R-J6	30	P702R	15	2		
P701R-J6	1	P702R	6	2		
P701R-J6	31	P702R	11	2		
P701R-J6	B/S	P702R	B/S	2		
P700R-J8	35	P688R-J3	18	2		
P700R-J8	36	P688R-J3	17	2		
P700R-J8	37	P688R-J3	B/S	2		
DGNS7-P1	9	P700R-J8	33	2		
DGNS7-P1	10	P700R-J8	32	2		
DGNS7-P1	11	P700R-J8	34	2		
DGNS7-P1	12	P700R-J8	B/S	2		
DGNS7-P1	47	P700R-J8	12	2		
DGNS7-P1	48	P700R-J8	15	2		
DGNS7-P1	49	P700R-J8	10	2		
DGNS7-P1	50	P700R-J8	14	2		
DGNS7-P1	51	P700R-J8	11	2		
DGNS7-P1	52	P700R-J8	13	2		
DGNS7-P1	13	P696R-J1	W	2		
DGNS7-P1	27	P696R-J1	T	2		
DGNS7-P1	14	CB115	2	2	8	
DGNS7-P1	28	CB220	2	2	8	
DGNS7-P1	8	P317R-J1	90	2		
DGNS7-P1	24	P317R-J1	72	2		
DGNS7-P1	29	P317R-J1	73	2		
DGNS7-P1	30	P317R-J1	100	2		
DGNS7-P1	31	P317R-J1	B/S	2		

FROM	FPIN	TO	TPIN	ID REF	NOTES	PASS/FAIL
DGNS7-P1	41	P317R-J1	57	2		
DGNS7-P1	42	P317R-J1	52	2		
DGNS7-P1	43	P317R-J1	B/S	2		
DGNS7-P1	4	P305R-J1	*A	2		
DGNS7-P1	25	P305R-J1	*H	2		
DGNS7-P1	38	P305R-J1	*W	2		
DGNS7-P1	39	P305R-J1	*V	2		
DGNS7-P1	40	P305R-J1	FLOAT	2		
DGNS7-P1	44	P305R-J1	*B	2		
DGNS7-P1	45	P305R-J1	*C	2		
DGNS7-P1	46	P305R-J1	FLOAT	2		
DGNS7-P1	1	DGNS8-P1	1	3		
DGNS7-P1	2	DGNS8-P1	2	3		
DGNS7-P1	3	DGNS8-P1	3	3		
DGNS7-P1	5	DGNS8-P1	5	3		
DGNS7-P1	6	DGNS8-P1	6	3		
DGNS7-P1	7	DGNS8-P1	7	3		
DGNS7-P1	15	DGNS8-P1	9	3		
DGNS7-P1	16	DGNS8-P1	17	3		
DGNS7-P1	17	DGNS8-P1	33	3		
DGNS7-P1	18	DGNS8-P1	42	3		
DGNS7-P1	19	DGNS8-P1	44	3		
DGNS7-P1	20	DGNS8-P1	12	3		
DGNS7-P1	21	DGNS8-P1	46	3		
DGNS7-P1	22	DGNS8-P1	47	3		
DGNS7-P1	23	DGNS8-P1	48	3		
DGNS7-P1	26	DGNS8-P1	13	3		
DGNS7-P1	36	DGNS8-P1	51	3		
DGNS7-P1	37	DGNS8-P1	52	3		
DGNS7-P1	65	DGNS8-P1	53	3		
DGNS7-P1	66	DGNS8-P1	54	3		
DGNS7-P1	32	P149R	8	3	9 TPIN (H)	
DGNS7-P1	33	P149R	33	3	9 TPIN (J)	
DGNS7-P1	33	P149R	34	3	9 TPIN (F)	
DGNS7-P1	34	P149R	36	3	9 TPIN (G)	
DGNS7-P1	35	P149R	GND149-1	3		

FROM	FPIN	TO	TPIN	ID REF	NOTES	PASS/FAIL
DGNS8-P1	10	P302R-J1	*H	4		
DGNS8-P1	22	P302R-J1	*A	4		
DGNS8-P1	24	P302R-J1	*W	4		
DGNS8-P1	25	P302R-J1	*V	4		
DGNS8-P1	26	P302R-J1	FLOAT	4		
DGNS8-P1	30	P302R-J1	*B	4		
DGNS8-P1	31	P302R-J1	*C	4		
DGNS8-P1	32	P302R-J1	FLOAT	4		
DGNS8-P1	11	P300R-J1	72	4		
DGNS8-P1	27	P300R-J1	57	4		
DGNS8-P1	28	P300R-J1	52	4		
DGNS8-P1	29	P300R-J1	B/S	4		
DGNS8-P1	38	P300R-J1	25	4		
DGNS8-P1	14	P317R-J1	102	4		
DGNS8-P1	15	P317R-J1	62	4		
DGNS8-P1	16	P317R-J1	B/S	4		
DGNS8-P1	18	P317R-J1	FLOAT	4		
DGNS8-P1	19	P317R-J1	85	4		
DGNS8-P1	20	P317R-J1	109	4		
DGNS8-P1	21	P317R-J1	97	4		
DGNS8-P1	23	P317R-J1	61	4		
DGNS8-P1	37	P317R-J1	25	4	10	
DGNS8-P1	43	P700R-J8	17	4		
DGNS8-P1	45	P700R-J8	16	4		
DGNS7-P1	55	DGNS1-P1	G	5		
DGNS7-P1	53	DGNS1-P1	F	5		
DGNS7-P1	57	DGNS2-P1	G	5		
DGNS7-P1	59	DGNS2-P1	F	5		
DGNS7-P1	61	DGNS3-P1	G	5		
DGNS7-P1	63	DGNS3-P1	F	5		
DGNS7-P1	56	DGNS4-P1	G	5		
DGNS7-P1	54	DGNS4-P1	F	5		

FROM	FPIN	TO	TPIN	ID REF	NOTES	PASS/FAIL
DGNS7-P1	58	DGNS5-P1	G	5		
DGNS7-P1	60	DGNS5-P1	F	5		
DGNS7-P1	62	DGNS6-P1	G	5		
DGNS7-P1	64	DGNS6-P1	F	5		
DGNS8-P1	36	DGNS1-P1	A	5		
DGNS8-P1	36	DGNS1-P1	B	5		
DGNS8-P1	35	DGNS2-P1	A	5		
DGNS8-P1	35	DGNS2-P1	B	5		
DGNS8-P1	34	DGNS3-P1	A	5		
DGNS8-P1	34	DGNS3-P1	B	5		
DGNS8-P1	41	DGNS4-P1	A	5		
DGNS8-P1	41	DGNS4-P1	B	5		
DGNS8-P1	40	DGNS5-P1	A	5		
DGNS8-P1	40	DGNS5-P1	B	5		
DGNS8-P1	39	DGNS6-P1	A	5		
DGNS8-P1	39	DGNS6-P1	B	5		
P305R	*D	P317R	74	2		
P305R	*E	P317R	110	2		
P305R	*F	P317R	110	2		
P305R	*G	P317R	108	2		
P302R	*D	P317R	99	4		
P302R	*E	P317R	86	4		
P302R	*F	P317R	86	4		
P302R	*G	P317R	98	4		

Verify power between test point and ground as follows:

- 1 Verify all LRU's and Relays are not installed.
- 2 Pilot and Copilot Relay Bracket Connectors properly installed.
- 3 Apply power to the airplane in accordance with UH60-A/L Technical Manual. Set panel lighting controls to maximum brightness.
- 4 Untag and close the following circuit breakers as listed below. Check each location with circuit beaker Engaged and Disengaged. Enter the results of each measurement within the area for the

Pass/Fail criteria.

5 Measure voltage from specified connection point to aircraft structure (ground). AC-L Lighting  
AC DC-P Primary DC AC-E Essential AC ID REF (a) Interconnect Diagram 1005443 ID REF (b)  
Interconnect Diagram 1005444

CB	CONNECTOR	PIN	VOLTAGE	AC/DC	ID REF	NOTE	PASS/FAIL
220	RLY2-P1	A1	26	AC-E	2(b)		
220	RLY4-P1	A1	26	AC-E	3(b)		
220	P696R-P1	T	26	AC-E	2(a)		
115	P696R-P1	W	28	DC-P	2(a)		
115	RLY1-P1	X1	28	DC-P	2(b)		
115	RLY2-P1	X1	28	DC-P	2(b)		
115	RLY7-P1	X1	28	DC-P	2(b)		
115	RLY3-P1	X1	28	DC-P	3(b)		
115	RLY4-P1	X1	28	DC-P	3(b)		
115	RLY5-P1	B2	.055	DC-P	4(b)		
115	RLY5-P1	X1	28	DC-P	4(b)		
115	RLY6-P1	B2	.055	DC-P	4(b)		
115	RLY6-P1	X1	28	DC-P	4(b)		
115	RLY8-P1	X1	28	DC-P	3(b)		

**Statement of Work (SOW)  
COMHAWK Helicopter Development**

**1.0**            **SCOPE:** This Statement of Work (SOW) defines the tasks that the Contractor shall accomplish for the fabrication, documentation, integration, acceptance testing and installation of one each Commander's HAWK (COMHAWK) "A" and "B" kit onto each of two (2) UH-60L aircraft. The Contractor shall provide all hardware, with the exception of the Government Furnished Equipment (GFE), to configure, acceptance test, and deliver the COMHAWK Aircraft, as specified in this SOW.

**2.0**            **APPLICABLE DOCUMENTS:** Applicable top level documents are contained in the Document Summary List (DSL) by number, title, and date. The document versions specified on the DSL take precedence over the generic references (without revision letters) cited in the SOW.

**3.0**            **REQUIREMENTS**

**3.1**            **PROGRAM MANAGEMENT**

**3.1.1**          **KICK-OFF MEETING:** The Contractor shall participate in a kick-off meeting via video teleconference NLT two weeks after award of the Delivery Order. At this meeting, the Contractor shall describe its approach to completing the tasks described in this SOW.

**3.1.2**          **PERFORMANCE PLAN:** The Contractor shall prepare a Performance Plan IAW DI-MISC-80508 and deliver IAW CDRL XXXX. The Performance Plan shall identify the tasks and sub-tasks defined in this SOW, along with a timeline schedule for completion of the tasks and sub-tasks and the estimated expenditures, by month, required to accomplish the tasks and sub-tasks. Estimated monthly expenditures shall identify total expenditures and shall separately identify labor hours, labor category, material, travel and Other Direct Costs (ODCs). The Contractor shall not commence work, other than the Performance Plan, until the Performance Plan has been approved. The Contracting Officer may permit performance to begin prior to approval of the plan if doing so is in the best interest of the Government.

**3.1.3**          **PERFORMANCE AND COST REPORTS:** The Contractor shall prepare Performance and Cost Reports IAW DI-FNCL-80912 and deliver IAW CDRL A072.

**3.1.4**          **INTEGRATED PRODUCT TEAM:** The Contractor shall participate in IPT teleconference calls with the Government once every two weeks. Contractor and subContractor project leads or subject matter experts shall participate, as required, to

discuss progress, requirements, issues/ concerns and anything related to program execution.

**3.1.5 PRELIMINARY DESIGN REVIEW (PDR):** The contractor shall conduct a PDR in Huntsville, AL following Government decision that the PDR entrance criteria delineated in paragraph 3.1.5.1 have been satisfied. The contractor shall prepare a detailed agenda for the PDR and provide the agenda to the Government through the IPT process no later than two (2) days prior to the PDR.

**3.1.5.1 PDR ENTRANCE CRITERIA:** Prior to conducting the PDR, the contractor shall complete the entrance criteria which shall include the following:

- trade study report
- preliminary design analysis
- requirements allocation traceability matrix with verification methods to the Configuration Item (CI) level
- subsystem architecture consisting of block diagrams and preliminary interface control documentation
- any additional criteria agreed to at the kick-off meeting

**3.1.5.2 PDR EXIT CRITERIA:** Prior to the completion of PDR, the contractor shall complete the exit criteria which shall include:

- documented resolution of all action items
- Government approval of preliminary design
- Government concurrence that the PDR exit criteria have been satisfied
- any additional criteria agreed to at the kick-off meeting

The Government will document review closure.

**3.1.6 CRITICAL DESIGN REVIEW (CDR):** The contractor shall conduct a CDR at the contractor's facility in Huntsville, AL following the Government decision that the exit criteria delineated in paragraph 3.1.6.1 have been satisfied. The contractor shall prepare a detailed agenda and provide the agenda to the Government through the IPT process no later than two (2) days prior to the CDR.

**3.1.6.1 CDR ENTRANCE CRITERIA:** Prior to conducting the CDR, the contractor shall complete the entrance criteria, which shall include:

- completion of design analysis
- all drawings to include assembly drawings
- any additional criteria agreed to and documented at the kick-off meeting.

**3.1.6.2 CDR EXIT CRITERIA:** Prior to the completion of CDR, the contractor shall complete the exit criteria which shall include:

- Government approval of design
- documented resolution of all action items
- Government concurrence that the CDR exit criteria have been satisfied
- any additional criteria agreed to at the kick-off meeting

The Government will document review closure.

**3.2 COMHAWK AIRCRAFT:** The Contractor shall integrate and install COMHAWK unique components separately, as stand-alone mission kits, and perform all Non-Recurring Engineering (NRE) onto two(2) GFP UH-60L Aircraft, Tail Numbers TBD.

**3.2.1 FLIGHT MANAGEMENT SYSTEM (FMS):** The Contractor shall integrate a UNS-1F FMS into the existing aircraft navigation displays that will allow the pilots to select either the FMS or existing UH-60L navigation systems for flight operations. The FMS shall include Control Display Unit (CDU) and GPS.

**3.2.1.1 CONTROL DISPLAY UNIT (CDU):** The Contractor shall integrate a UNS-1F FMS CDU that allows the operator to input navigational data and select FMS modes of operation and displays data from both GPS and existing Very High Frequency (VHF) Omni-Directional Radio-Range (VOR) systems.

**3.2.2 COLOR WEATHER RADAR:** The Contractor shall integrate a Color Weather Radar to provide compensation for marginal weather reporting in areas not supported by US weather facilities, to enhance on-the-fly mission changes supported by the FMS and to reduce enroute weather delays. The Color Weather Radar system shall have a color display. The system shall also have an avoidance range of not less than 225 nautical miles. The system shall enable the user to overlay navigation and weather information simultaneously. The Contractor shall design the UH-60L COMHAWK system so that Color Weather Radar mode control data entry is through the FMS. The system shall have a Mean Time Between Failure (MTBF) of not less than 5000 hours.

**3.2.3 SEATING:** The Contractor shall integrate a new VIP seating for a minimum of eight passengers and one non-rated crewmember that meets the requirements of SAE AS8049A and SES-700700.

**3.3 GOVERNMENT FURNISHED PROPERTY:** The Government will also provide the following GFP to the Contractor at dates and locations to be mutually agreed upon as part of this effort:

- Two (2) UH-60L
- Two (2) UNS-1F FMS A and B-kits

**3.4 CONFIGURATION MANAGEMENT:** The Contractor shall manage and maintain configuration control of the development baseline documentation for the COMHAWK "A and B" kits IAW the Contractor's established CM Plan until the

Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) has been satisfactorily completed, all errors have been corrected, and the Government has accepted all CM Technical Documentation required to be prepared and delivered IAW this SOW.

**3.4.1 SYSTEM/SEGMENT INTERFACE CONTROL SPECIFICATION:**

The Contractor shall prepare a System/Segment Interface Control Specification for the COMHAWK IAW DI-CMAN-81314 and Enclosure ??? and deliver IAW CDRL ????. References to Associated Interface Control Drawings shall be included in the ICS. The Contractor shall apply Government Specification number AVNS-ICS-???? and CAGE Code 81996 to the ICS.

**3.4.2 PRODUCT DRAWINGS AND ASSOCIATED LISTS:** The Contractor shall prepare new or revised Product Drawings and Associated Lists, including (as applicable) detail, assembly, installation, control, interface, electrical and special application drawings as defined in ASME-Y14.24, IAW DI-SESS-81000 and its Option Selection Worksheet, Enclosure ??, and deliver IAW CDRL ????. The Contractor shall include Kit Drawings IAW ASME Y14.24 for "A" and "B" Kit documentation to be delivered. The Contractor shall prepare Control Drawings and their associated parts lists for identification of GFE and purchased items or assemblies meeting ASME-Y14.24 descriptions and definitions of Procurement Control, Vendor Control, Source Control or Envelope Drawings. Definition of GFE items is limited to part nomenclature, part number, source, and NSN (if assigned). The Contractor shall utilize Government drawing numbers with AMCOM formats and CAGE Code 81996.

**3.4.3 ENGINEERING CHANGE PROPOSAL (ECP):** The Contractor shall prepare a formal Class I ECP to identify and record all new drawings/specifications and changes to existing engineering and logistic support documentation for the subject configuration item IAW DI-CMAN-80639 and deliver IAW CDRL ????. The Class I ECP shall be assigned AMCOM number AV-10312 & CAGE Code 81996.

**3.4.4 ENGINEERING RELEASE RECORD (ERR):** The Contractor shall prepare an ERR for the Class I ECP IAW DI-CMAN-80463 and deliver IAW CDRL ????. The ERR number shall be the same as the associated ECP and shall list all new or revised documentation affected by the ECP.

**3.4.5 CONFIGURATION AUDITS AND SUMMARY REPORT:** Using MIL-HDBK-61 as a guide, the Contractor shall conduct FCAs/PCAs of the COMHAWK Kit documentation, required operational functions, interfaces, and physical identification, including engineering changes, modifications, software verification, installation procedures and logistic supportability and resolve any reported discrepancies. The Contractor shall support Government participation in selected audits and prepare a Configuration Audit Summary Report to record and report the results of each audit to include the status and final disposition of identified discrepancies. The Report shall be prepared IAW DI-CMAN-81022 and delivered IAW CDRL ???.

**3.4.6        REQUEST FOR DEVIATION (RFD):** The Contractor shall prepare an RFD IAW DI-CMAN-80640 and deliver IAW CDRL ???? when a materiel deviation affects any of the system attributes that are described as Major in APPENDIX 2 to the SOW. The Government will not accept Critical defects as a Deviation.

**3.4.7        PRODUCT IDENTIFICATION/MARKING:** The Contractor shall identify and mark all items delivered under this contract including parts, assemblies, units, sets, and modified GFE, IAW MIL-STD-130.

**3.5        SYSTEM SAFETY:** The Contractor shall produce the COMHAWK such that the risk of personnel injury and equipment damage under all conditions of normal use (installation, maintenance, and operations) and under a likely fault condition including human error throughout the design service life is not increased from the COMHAWK mission kits. The Contractor shall produce the COMHAWK without compromising system compliance with recognized consensus safety standards (UL, NEPA, OSHA, ANSI, IEEE, etc.) applicable to the system design. The system safety process shall be used to identify hazards that could occur during the entire life cycle and shall categorize severity and frequency of the identified hazards IAW MIL-STD-882. The Contractor shall prepare a Safety Assessment Report (SAR) IAW DI-SAFT-80102 and deliver IAW CDRL ????.

## **3.6        LOGISTICS**

### **3.6.1        PUBLICATIONS:**

**3.6.1.1        TECHNICAL MANUAL (TM):** The Contractor shall prepare and deliver a standalone TM for the installation, maintenance and operation of the COMHAWK Mission Kits. The TM developed shall meet the standards found in MIL-STD-40051, MIL-STD-2361, and **Attachment ?** IAW MIL-STD-40051 and DI-MISC-80508 and deliver IAW **CDRL ????.** The Contractor shall use the AMCOM provided variant of Document Type Definition (DTD) version 2.1.6. The Contractor shall refer to MIL-HDBK-1222 as a guide for the Government's preferred method of development.

**3.6.1.1.1        ILLUSTRATIONS:** Illustrations used in the development of the TM, excluding those created for RPSTL purposes, may be color photographs. All photographs must meet standards found in MIL-STD-40051 and be pre-screened and prove acceptable by Government publications personnel prior to use in the TM.

**3.6.1.1.2        MAINTENANCE ALLOCATION CHART (MAC):** The Contractor shall prepare a MAC IAW DI-ALSS-81530, MIL-STD-40051, and Appendix B, TM 1-1520-237-23 (MAC), tailored by **Enclosure ????,** and deliver IAW **CDRL ????.** The MAC shall be in a top down pyramidal breakdown sequence of the end item by functional groups that require maintenance. The MAC shall include all maintenance significant components, assemblies, subassemblies, and modules. For each repairable assembly or subassembly, the MAC shall identify the maintenance function to be performed, the level of responsibility for the function, the active repair time, and tools

and test equipment necessary to perform the function. No item will be deleted from the MAC unless the contractor is specifically authorized to do so. If a maintenance function is a replacement function only for a repair part, the item shall not be listed in the MAC, unless not listing the item would result in deletion of the group number. In this case, the item shall be listed in order to retain the functional group number.

**3.6.1.1.3      REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL):** The Contractor shall develop the RPSTL portion of the TM as indicated in MIL-STD-40051, MIL-STD-2361 and **Attachment ?**. All illustrations used for creation of the RPSTL shall be prepared as line drawings and shall be prepared as vector-based Computer Graphic Metafiles (CGM) containing text-based callouts. Photographs shall not be used. Stacked call-outs shall not be used during the creation of any illustrations unless expressly authorized by the Government.

**3.6.1.1.4      BULK MATERIALS AND OTHER ITEMS:** Bulk Material shall be assigned to functional group 60. Special Tools shall be assigned to functional group 80. Flyaway Items shall be assigned to functional group 81. Ground Support Items shall be assigned to functional group 82.

**3.6.1.1.5      DEPOT LEVEL REPAIR:** Items containing a "D" (for Depot level repair) in the third position of the Source, Maintenance, and Recoverability (SMR) Code shall be included in the RPSTL. When the RPSTL contains "D" coded items, the statement "(Including Depot Maintenance Repair Parts)" shall be added to the TM title.

**3.6.1.2      SUBCONTRACTOR REQUIREMENTS:** The Contractor shall ensure that publication requirements of this contract levied on all subcontractors are fulfilled. The prime Contractor shall ensure that subcontractor data is correct and meets standards as noted in this SOW. The prime Contractor shall be responsible for securing any required data for publication change development requested by subcontractors. The prime Contractor shall be the interface between the Government and subcontractors.

**3.6.1.3      CRITICAL SAFETY ITEM (CSI):** CSIs will be provided as source data to the Contractor. For all publications certified by Government Engineering as containing CSIs, the Contractor shall include a Warning on the Warning Page which shall read: "This technical manual contains procedures for identifying critical characteristics of CSIs. Critical characteristics may be identified as dimensions, tolerances, finishes, materials, assembly or inspection procedures. Some processes may require qualified sources. CSIs indicating a maximum allowable limit shall not be continued in use when limits have been exceeded. These parts must be replaced." Additionally an appropriate Warning will precede the text of any procedures involving CSIs. Related procedures shall be included in the procedural steps or tables that clearly define actions required to maintain the critical characteristic of the materials involved. If the Government Engineering has certified that the publication does not contain CSIs, the Contractor shall include this information as a Note on the bottom of the Warning Page. This note shall read, "This technical manual does not contain procedures affecting Critical Safety Items."

**3.6.1.4      TM VALIDATION:** The Contractor shall perform a validation of all TMs/changes to include Extensible Markup Language (XML), publication formatting, illustrations, photographs and pages required prior to submission of the TMs/changes to the Government IAW this SOW. In addition the Contractor shall:

- Submit a Validation Report for the TMs/changes IAW DI-ADMN-80792 and deliver IAW **CDRL** ?????. Contractor records of the validation process will be available to the Government upon request.
- Ensure that all parts required because of the installation of the COMHAWK Mission Kits listed on the changed pages agree with the engineering drawing. The parts used during validation of the COMHAWK Mission Kits shall be of the final qualified configuration.
- Complete the installation of the COMHAWK Mission Kits by following the procedures contained in the draft publication using the specified tools listed therein plus those common tools available to the maintenance activity and personnel specified in the recommended change.
- The Government reserves the right to witness the validation. Government observation of the validation will not necessarily constitute a verification of the recommended change.

**3.6.1.5      PUBLICATION SUBMISSIONS:** The Contractor shall submit validated TMs/changes for purposes of Government verification to: CMDR, AMCOM, ATTN: AMSAM-MMC-AV-UT, (Publications) Sparkman Center, Building 5309, Redstone Arsenal, AL 35898-5000.

**3.6.1.6      GOVERNMENT VERIFICATION:** The Contractor shall support verification of TMs/changes IAW **Attachment ?** by providing the required replacement parts, special tools specified by the draft TMs/changes, which are not currently available in the Army system, and complete and legible hard copies of the validated TMs/changes. The Contractor shall also provide a set of current change drawings, and personnel to record and make corrections to the validated page changes and /or engineering drawings.

- The Contractor shall correct all errors found during verification at no additional cost to the Government. After Government acceptance of the product, the Government reserves the right to require the Contractor to correct all errors found in manual changes at no additional cost to the Government within 30 days of the final acceptance.
- The Contractor shall provide a list of unincorporated comments for TMs/changes to the Government for resolution.

**3.6.1.7      SOURCE MATERIALS:** The Contractor shall package and deliver all publications source materials defined as color photographs, graphics, in vector-based CGM format, and XML or SGML coded text reflecting all information and materials used to create the Final Reproducible Copies (FRC) of the TM and illustrations or RPSTL pages associated with this SOW. Source Material shall be delivered IAW DI-MISC-80508 and delivered IAW **CDRL ????.**

**3.6.2      PROVISIONING:**

**3.6.2.1      PROVISIONING TECHNICAL DOCUMENTATION (PTD):** The Contractor shall develop COMHAWK Mission Kits PTD for use on the H-60 aircraft IAW with the requirements, instructions, and detailed procedures set forth in MIL-PRF-49506, DI-ALSS-81529, DI-ALSS-81557, DI-ALSS-81530, **Attachment ?**, and this SOW.

**3.6.2.1.1      INPUT MEDIA:** The input media used by the Contractor to prepare provisioning data shall be compatible with the Army Materiel Command (AMC) developed Commodity Command Standard System (CCSS) applications program.

**3.6.2.1.2      PROVISIONING PARTS LIST (PPL):** The Contractor shall prepare a PPL in top down breakdown sequence with the items within each assembly being in disassembly sequence, IAW DI-ALSS-81529, tailored by **Enclosure XXXX**, and deliver IAW **CDRL XXXX**. This list, structured at the end item level, shall contain the end item and all support items, which can be disassembled, reassembled, or replaced. The list shall include parts, and materials required for the maintenance and operation of the end item. The PPL shall contain all tools, test equipment (including built-in test), repair kits and repair parts sets required to maintain the end item. Individual parts required in the fabrication of welded assemblies, laminated assemblies, castings, forgings and extrusions shall not be included in the breakdown. Special Test Equipment (STE), which has not been previously provisioned, shall be included. The Provisioning Contract Control Numbers (PCCN) will be assigned by the Government.

**3.6.2.1.2.1      J and K CARDS:** The contractor shall prepare add/change data on the "J" and "K" cards (Provisioning Technical Documentation), which shall be furnished in the PPL (RPSTL Data Report). Specific card columns of the "J" card which are to be completed are (13-15) TM Code, (16-19) Figure Number, (20-23) Item Number, (26) TM Indenture Code, (27-29) Quantity Per Figure, (30-40) Work Unit Code/Functional Group Code, and (78-80) Card Sequence Number. Card columns 24-77 on the "K" card are used for additional narrative when required. Card columns 16-23 should also be completed on the "K" card. PCCN (Card Columns 1-6), Provisioning Line/List Item Sequence Number (PLISN) (Card Columns 7-11) and Action Code (Card column 12) shall be furnished with each "J" and/or "K" card prepared. Changes to key data fields, TM Code, Figure Number, and Item Number will require a delete and add function with appropriate action code. The PPL shall include J and K card RPSTL data formatted IAW DI-ALSS-81529 and **Attachment ?**.

**3.6.2.1.2.2 REPAIR KITS:** Repair Kits shall be added as the last item within the last figure to which they are applicable, using the functional group code and last sequence number for placement at the end of figure. Kits will not have an item number since they do not appear on the RPSTL illustration. Kits shall be prepared in accordance with Figure 6, MIL-STD-40051. If an item is a component of a repair kit, enter an asterisk (\*) in Card Column 13 of the "A" card (Indenture Code) and an asterisk (\*) in the sixth position of the Next Higher Assembly (NHA) PLISN, Card Column 18 of the "C" card. These kit components shall require a minimum of two NHA PLISN's, one for the kit and one for the assembly.

**3.6.2.1.2.3 MANUFACTURED ITEMS:** Manufactured items, i.e., all items source coded "MO", "MF", or "MD" shall have the following statement in the DESCRIPTION AND USABLE ON CODE column; MAKE FROM (enter the applicable part number and make from instructions). Bulk material (material used in bulk for the manufacture/fabrication of support items, e.g., sheet metal, pipe tubing, bar stock, and gasket material) used to make items shall also be shown in a separate functional group called BULK MATERIAL, with the figure title as "FIG. BULK".

**3.6.2.1.2.4 SUPPRESSED ITEMS:** When an item is required for the PPL, but is not required for the RPSTL, an asterisk (\*) shall be entered in Card Column 19 of the "J" card, right justified, and a functional group code shall be entered in Card Columns 30 through 40 of the "J" card, left justified. Items coded "PZ" in the first two characters of the SMR Code shall not be included in the RPSTL. Items coded "XA", where all items in the assembly are also coded "XA", shall be reviewed by the contractor and the Government to determine if they should appear in the RPSTL.

**3.6.2.1.2.5 COMMON AND BULK ITEMS:** The Contractor shall account for common and bulk Items in their normal position within the top down breakdown sequence of the PPL when maintenance practices establish a need for "manufacture from" item. A minimum of two (2) entries is required for each bulk item. The first appearance of a bulk item will list only that portion that is used at the particular application/location. If a "make from" item appears more than once, each appearance will require a PLISN listing for that location. The stocked bulk item (the bulk that the "make from" items are "manufactured from") will appear in the PPL at the bottom of the PLISN structure.

**3.6.2.1.2.6 PART NUMBERS:** The Contractor shall make maximum use of existing Government part numbers for all common hardware/bulk material items. In all cases, where they exist, the contractor will use Government/Federal Specifications, Standards or other Government standard numbers for items such as, but not limited to, nuts, bolts, washers, wire, rope, screws, lubricants, springs, roll pins, and clevis pins.

**3.6.2.1.3 SUPPLEMENTAL DATA FOR PROVISIONING (SDFP):** The Contractor shall prepare a SDFP IAW DI-ALSS-81557 and deliver IAW CDRL XXXX. The Contractor shall provide the SDFP for all first appearance only items on the PPL which are not documented by Government drawings, specifications, or standards.

#### **3.6.2.1.4 PROVISIONING & OTHER PRE-PROCUREMENT SCREENING**

**DATA:** The Contractor shall prepare Provisioning Screening requests IAW DI-ALSS-81529 and deliver IAW CDRL XXXX. The Contractor shall submit Provisioning Screening requests to Federal Logistics Information Service (FLIS) for all first appearance entries on the PPL. If screening results indicate a National Stock Number (NSN) does not exist, the Contractor shall identify an Approved Item Name (AIN) from cataloging handbook H6 and enter the AIN into the PPL. If an AIN cannot be identified in the H6 handbook, the Contractor shall select a similar item name with same characteristics that identifies the item. The Contractor shall utilize FLIS screening results to update the PPL. The FLIS screening results will take precedence over all other references. The Contractor shall include the results of the FLIS screening in the appropriate blocks/columns on all submittals of the PPL.

**3.6.2.2 TOOLS AND TEST EQUIPMENT LIST:** The Contractor shall prepare the Tool and Test Equipment List IAW DI-ALSS-81529 and deliver IAW CDRL XXXX. The list shall include all support equipment required to inspect, test, calibrate service or repair/overhaul the end item or component.

**3.6.2.3 IN PROCESS REVIEW CONFERENCE (IPRC):** The Contractor shall participate in IPRCs to review the provisioning status. The Government may schedule an IPRC at any time during the life of the contract for the purpose of resolving provisioning problems or review of the provisioning process. The time and place will be determined by mutual agreement between the Government and the Contractor.

**3.6.2.4 PROVISIONING CONFERENCE:** The Contractor shall incorporate all data added and/or corrected, as a result of the Provisioning Conference into the final PPL delivered IAW CDRL XXXX. The contractor shall make arrangements for and participate in the Provisioning Conference and provide the following:

- Sample article(s) for disassembly or government viewing.
- Personnel with technical knowledge of the end item with regard to the design, reliability and the maintenance characteristics of the end item or the portion of the end item being provisioned.
- This conference shall be held at the contractor's site unless availability of the sample article is only available at a Government site.

**3.7 QUALITY ASSURANCE:** The Contractor shall implement a quality system that satisfies the program objectives IAW ANSI/ASQ-Q9001.

**3.7.1 ACCEPTANCE TESTING:** The Contractor shall prepare an Acceptance Test Procedure (ATP) for each major component of each COMHAWK configuration IAW DI-NDTI-80603 and deliver IAW CDRL XXXX. The Contractor

shall conduct acceptance tests IAW the Government approved ATPs. The Contractor shall complete these acceptance tests prior to Government acceptance. The Contractor shall prepare an initial Test Report for each ATP IAW DI-NDTI-80809 and deliver IAW CDRL XXXX. The reports shall include verification that the tests conducted meet the criteria identified in the Government approved ATP.

### **3.8            ENGINEERING**

**3.8.1            ANALYSES:** The Contractor shall prepare the following documentation to obtain a Contractor Flight Release (CFR) and support an Airworthiness Release (AWR):

**3.8.1.1            WEIGHT AND BALANCE ANALYSIS:** The Contractor shall prepare a weight and balance analysis depicting the impacts of the incorporation of the requirements of this SOW into the aircraft IAW DI-MGMT-81501 and deliver IAW CDRL #####. The contractor shall weigh each aircraft after the completion of the integration of the requirements of this SOW, prepare an Actual Weight and Balance Report IAW DI-MGMT-81501, and deliver IAW CDRL #####.

**3.8.1.2            ELECTRICAL LOADS ANALYSIS:** The Contractor shall develop an Electrical Loads Analysis for the new requirements of this SOW to validate adequate circuit breaker protection and adequate wire sizing using SAE-AS50881 as a guide IAW DI- MISC-80508 and deliver IAW CDRL #####.

**3.8.1.3            CRASH LOADS STRUCTURAL ANALYSIS:** The Contractor shall develop a Crash Loads Structural Analysis to verify that the mounting of any equipment associated with this SOW in the cabin or cockpit area complies with the requirements of paragraph 3.2.2.4.1.11 and 3.2.2.4.4.1 of SES-700700. The contractor shall prepare this analysis IAW DI- MISC-80508 and deliver IAW CDRL #####.

**3.8.1.4            STRENGTH LOADS ANALYSIS:** The Contractor shall prepare a strength load analysis of any airframe modifications and impacts on the airframe due to the integration required in this SOW to the requirements of paragraph 3.2.2.4 of SES-700700 IAW DI-GDRQ-80198 and deliver IAW CDRL #####.

### **3.9            ENVIRONMENTAL (ENVIRONMENTAL REQUIREMENTS DO NOT APPLY TO GFE AND GFI.)**

**3.9.1**            The Contractor and its first tier subcontractors shall comply with all applicable federal, state, and local environmental statutes and regulations for all activities defined in this SOW. The Contractor and its first tier subcontractors shall develop, update and maintain the Hazardous Material Management Program (HMMP). The Contractor shall prepare an HMMP Plan IAW DI-MGMT-81398, using National Aerospace Standard (NAS) 411 as a guide, and deliver IAW CDRL XXXX.

**3.9.2** The Contractor shall maintain company/corporate environmental policies and procedures that describe the manufacturing processes utilized by the Contractor to comply with existing applicable pollution prevention and hazardous material management requirements. The Contractor shall provide the Government access to these records upon request.

**3.9.3** The use of toxic chemicals and hazardous substances shall be avoided or minimized in the operation, repair and maintenance of the equipment and its components, whenever feasible. The Contractor and its subcontractors shall not use Class I and should avoid or minimize the use of Class II Ozone Depleting Substances (ODS). The Contractor's Systems Engineering process shall ensure that Class I ODSs are not required and that Class II ODSs are avoided or minimized.

**3.9.4** The Contractor and its first tier subcontractors shall report hazardous materials (HAZMATS) which travel with the system, parts or other deliverables to the Government with special emphasis on the Environmental Protection Agency (EPA) list of 17 toxic chemicals as well as the Department of Defense (DoD) top 10 Toxic Release Inventory (TRI) List of Hazardous Chemicals. The Contractor shall prepare an HMMP Progress Report IAW DI-MISC-81397, using NAS 411 as a guide, and deliver IAW CDRL XXXX.

**3.9.5** When ECP 17 or DoD top 10 TRI listed hazardous materials are identified, the Contractor shall conduct an alternative materials and alternative process opportunity assessment to determine the availability of possible substitute materials and feasibility of using an identified alternative.

**3.10** **PRESERVATION AND PACKAGING:** The Contractor shall develop preservation and packaging data IAW MIL-STD-2073-1D.

**3.10.1** **PACKAGING DATA:** The Contractor shall develop, cost efficient, "Military Preservation", level A, packaging data for up all newly provisioned items IAW MIL-STD-2073-1D. The Contractor shall develop this data utilizing the item classification definitions in Appendix 2 to this contract. The Contractor shall prepare the data IAW DI-PACK-80120 and deliver IAW CDRL XXXX. Packaging data shall not be developed for items with a source code of PZ, XA, and XB. The data elements required are identified on Appendix 5 (Packaging Data Selection Sheet).

**3.10.2** **REUSABLE CONTAINERS:** The Contractor shall specify appropriate level A, IAW MIL-STD-2073-1D, reusable shipping and storage containers for all items used at organizational or intermediate level with a recoverability code of D or L (to include A if there is a D or L in the fourth position of the SMR code). Long life multi-application containers are the preferred containers and shall not be wood or fiberboard materials. Each container shall be identified by NSN and part number. Where applications of multi-application reusable container are not suitable, the Contractor shall provide recommendations for level A special reusable container design utilizing a wood box, plastic or metal reusable container.

**3.10.3      SPECIAL PACKAGING INSTRUCTIONS (SPI):** Packaging requirements too complex to be specifically and accurately coded shall require a Special Packaging Instruction (SPI). The Contractor shall prepare the SPI IAW DI-PACK-80121 and deliver IAW CDRL XXXX. The Contractor shall develop a SPI for any wood box special container design.

**3.10.4      HAZARDOUS MATERIALS:** The Contractor shall review all items to determine hazardous material classification. For each Item identified as hazardous, the Contractor shall provide Material Safety Data Sheets (MSDS). Packaging tests performed to acquire data necessary to comply with the Performance Oriented Packaging (POP) requirements of hazardous materials shall comply with Title 49, Code of Federal Regulations (49 CFR), the International Maritime Dangerous Goods (IMDS) Code, and the International Civil Aviation Organization (ICAO), Technical Instructions for the Safe Transport of Hazardous Goods. The Contractor shall prepare POP test reports IAW DI-PACK-81059 and deliver IAW CDRL XXXX. The Contractor shall conduct testing IAW American Society for Testing and Materials (ASTM) D4919-89, Testing of Hazardous Materials Packaging. The Contractor shall provide a written response when no hazardous materials are identified under subject criteria. Requirements for bar coding, marking, warning labels and tags shall be IAW MIL-STD-129.

**3.10.5      PACKAGING REQUIREMENTS IN MARINE ENVIRONMENT (PRIME):** The Contractor shall minimize plastic packaging material whenever possible without degrading the protection of the item.

**3.11          PERIOD OF PERFORMANCE:** The period of performance for this effort is twelve months after contract award.

TDP OPTION SELECTION WORKSHEET DEVELOPMENTAL DESIGN DRAWINGS AND ASSOCIATED LISTS							
A. CONTRACT NO. <b>UH-60/IAFTS</b>		B. EXHIBIT/ATTACHMENT NO. <b>ENCLOSURE A004</b>		C. CLIN	D. CDRL DATA ITEM NO. <b>DI-SESS-81000C</b>		
<b>1. DELIVERABLE PRODUCT (and complete X as applicable.)</b>							
a. ORIGINALS (Specify current design activity's full size reproducible drawing or digital data file(s) on which is kept the revision record recognized as official) (Identify specification, type, grade and class, etc.)							
b. REPRODUCTIONS (Identify specifications, type, grade and class, etc., and quantity of each)							
<b>X</b> c. DIGITAL DATA (Identify specification, exchange media, etc. and specify original (master) or copy) Contractor shall submit <b>MIL-PRF-28002</b> , Type I, CALS Raster Image Data IAW <b>MIS-STD-52406A-IS</b> on <b>Compact Disk (CD)</b> . Use Weapon System Code " <b>BE</b> " for Data Element # 56.							
<b>2. CAGE CODE AND DOCUMENT NUMBERS (X ONE)</b>							
a. CONTRACTOR							
<b>X</b> b. GOVERNMENT (Complete (1) and (2) or (3))							
(1) Use CAGE Code <b>81996</b>		(2) Use Document Numbers <b>1011737 thru 1011786 (50) Dwg No.s</b>		(3) To Be Assigned By: <b>Utility Helicopters PMO Configuration Management Office</b>			
<b>3. DRAWING FORMATS AND DRAWING FORMS (X one and complete as applicable)</b>							
a. CONTRACTOR FORMATS. Forms to be supplied by contractor.							
<b>X</b> b. GOVERNMENT FORMATS. Forms to be supplied by contractor. Samples supplied by SFAE-AV-UH-T <span style="float: right;"><b>SEE BLOCK 9</b></span>							
c. GOVERNMENT FORMATS. Forms to be supplied as Government Furnished Material by (Specify)							
<b>4. TYPES OF DRAWINGS SELECTION (X one)</b>							
<b>X</b> a. CONTRACTOR SELECTS FROM <b>ASME Y14.24 1999</b>				b. GOVERNMENT SELECTS (Specify in Item 8)			
<b>5. ASSOCIATED LISTS (X and complete as applicable)</b>							
<b>X</b>	a. PARTS LISTS (X one)		(1) Integral		(2) Separate	<b>X</b>	(3) Contractor's Option
<b>X</b>	b. DATA LISTS (X one)		(1) Not Required	<b>X</b>	(2) Required (Specify levels of assembly) <b>To lowest level of repair or replacement.</b>		
	e. INDEX LISTS (X one)	<b>X</b>	(1) Not Required		(2) Required (Specify levels of assembly)		
<b>X</b>	d. WIRING LISTS (X one)		(1) Not Required	<b>X</b>	(2) Required (Specify levels of assembly) <b>To lowest level of repair or replacement.</b>		
	e. INDENTURED DATA LISTS (X one)	<b>X</b>	(1) Not Required		(2) Required (Specify levels of assembly)		
<b>X</b>	f. APPLICATION LISTS (X one) On drawing preferred		(1) Not Required	<b>X</b>	(2) Required (Specify levels of assembly) <b>Top Level (Kit Drawing)</b>		
<b>6. DETAILS (X one)</b>							
<b>X</b> a. MULTIDETAIL DRAWINGS PERMITTED				MONODETAIL DRAWINGS MANDATORY			
<b>7. APPLICABILITY OF STANDARDS.</b> The following Standards apply: (X as applicable)							
<b>X</b>	a. <b>ASME Y14.100</b> , ENGINEERING DRAWING PRACTICES (COMMERCIAL)	<b>B. X</b>	b. ASME Y14.100, WITH APPENDICES B, C, D, E	<b>X</b>	c. <b>ASME Y14.34M</b> , ASSOCIATED LISTS		d. EXISTING STANDARDS DO NOT APPLY
		C.					
		D.					
		E.					
<b>8. OTHER TAILORING</b>							
Newly created Drawings & Associated Lists shall be on <b>AMCOM formats (CAGE Code 81996)</b> using drawing numbers assigned sequentially from the block of 50 supplied by the Government in block 2b (2) above. <b>AMCOM Aviation CAD Formats</b> on disk in .dxf, .dwg & .dgn have been provided previously by the Utility Helicopters CMO or from: US ARMY Aviation & Missile Life Cycle Management Command Attn: AMSRD-SE-TD-SA, Redstone Arsenal, AL 35898.							

**ENCLOSURE A005**  
**DATA DELIVERY DESCRIPTION - ENGINEERING CHANGE PROPOSAL (ECP)**

This Data Delivery Description (DDD) contains the content and preparation instructions for the data product resulting from the work task specified in the contract. This DDD is used in conjunction with a Notice of Revision (NOR). A requirement for NORs, as applicable, should be contractually imposed in conjunction with this DDD.

**Requirements:**

1. Reference documents. The applicable issue of any documents cited herein, including their approval dates and dates of any applicable amendments, notices, and revisions, shall be as specified in the contract.
2. Format and content. The Engineering Change Proposal shall be prepared in contractor format.
3. Supporting data. In addition to the information required below, the ECP shall include supporting data. Formal ECPs shall be supported by drawings and other data (e.g., Logistic Support Analysis (LSA) data, detailed cost proposal data, test data and analyses) as specified in the contract to justify and describe the change and to determine its total impact including assessments of changes to system operational employment characteristics. When a life cycle cost and/or operation and support cost model has been included in the contract, the ECP shall also include the costs expected to result from the implementation of the change into all future production and spare items projected to be procured for the program. Also for all projected operation and support costs for operation of the total inventory of items by the Government. A summary of any testing done to validate concepts or new technology to be employed in the proposed engineering change shall be presented in the supporting data. Details of such test data shall be provided if it is vital to the decision regarding acceptance of the change.
4. Distribution statement. The appropriate distribution statement shall be affixed to the ECP in accordance with the requirements of the contract.
5. Date. Provide the submittal date of the ECP or of the revision to the ECP.
6. Procuring Activity Number (PAN): Provide the PAN of the procuring activity, if known.
7. DODAAC. Provide the DODAAC of the procuring activity, if known.
8. Originator name and address. Provide the name and address of the contractor submitting the ECP.
9. Designate as either Class I or II. Proposed changes that do not meet the criteria for Class I shall be designated as Class II. The engineering change shall be Class I if:
  - a. The Functional Configuration Documentation (FCD) or Allocated Configuration Documentation (ACD) is affected to the extent that any of the following requirements would be outside specified limits or specified tolerances:
    - (1) Performance.
    - (2) Reliability, maintainability or survivability.
    - (3) Weight, balance, moment of inertia.
    - (4) Interface characteristics.
    - (5) Electromagnetic characteristics.
    - (6) Other technical requirements in the specifications.

NOTE: Minor clarifications and corrections to FCD or ACD shall be made only as an incidental part of the next Class I ECP NOR, unless otherwise directed by the Government.

  - b. A change to the Product Configuration Documentation (PCD) will affect the FCD or ACD as described in paragraph 9a or will impact one or more of the following:
    - (1) Government Furnished Equipment (GFE).
    - (2) Safety.

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- (3) Compatibility or specified interoperability with interfacing CIs, support equipment or support software, spares, trainers or training devices/ equipment/software.
- (4) Configuration to the extent that retrofit action is required.
- (5) Delivered operation and maintenance manuals for which adequate change/revision funding is not provided in existing contracts.
- (6) Preset adjustments or schedules affecting operating limits or performance to such extent as to require assignment of a new identification number.
- (7) Interchangeability, substitutability, or replaceability as applied to CIs, and to all subassemblies and parts except the pieces and parts of non-reparable subassemblies.
- (8) Sources of CIs or repairable items at any level defined by source-control drawings.
- (9) Skills, manning, training, biomedical factors or human-engineering design.

c. Any of the following contractual factors are affected:

- (1) Cost to the Government including incentives and fees.
- (2) Guarantees or warranties.
- (3) Deliveries.
- (4) Scheduled milestones.

10. Justification code. Provide a justification code that is applicable to a proposed Class I engineering change. The justification code is not required for Class II ECPs. If more than one of the following codes are applicable, the one which is the most descriptive or significant shall be assigned to the ECP.

- a. Interface. Code B shall be assigned to an engineering change proposal for correction of a deficiency which will eliminate interference or incompatibility at an interface between CIs.
- b. Compatibility. Code C shall be assigned to an engineering change to correct a deficiency with the following characteristics:
  - (1) The need for the change has been discovered during the system or item functional checks or during installation and checkout and is necessary to make the system or item work.
  - (2) By assigning the compatibility code the contractor is declaring that the effort required to accomplish the change is considered to be within the scope of the existing contract except for changes caused by the Government.
  - (3) Contractual coverage completing the formal documentation of the engineering change will not reflect an increase in contract price for the corrective action in production and to delivered items in-warranty or otherwise stipulated in the contract.
- c. Correction of deficiency. Code D shall be assigned to an engineering change which is required to eliminate a deficiency, unless a more descriptive separate code applies. Such separate codes are used to identify deficiencies of the nature of safety, interface, or compatibility.
- d. Operational or logistics support. Code O shall be assigned to an engineering change which will make a significant effectiveness change in operational capabilities or logistics support.
- e. Production stoppage. Code P shall be assigned to an engineering change which is required to prevent slippage in an approved production schedule. This code applies when production to the current configuration documentation either is impracticable or cannot be accomplished without delay.
- f. Cost reduction. Code R shall be assigned to an engineering change which will provide a net total life cycle cost savings to the Government, but which is not being submitted pursuant to the Value Engineering clause of the contract. The savings in life cycle cost should include all effects on cost and price for the effort and requirements covered by the contract(s) currently in effect for this contractor, plus the costs resulting from necessary associated changes in delivered items, and logistics support.
- g. Safety. Code S shall be assigned to an engineering change for correction of a deficiency which is required primarily to eliminate a hazardous condition. When this code is assigned, a system hazard analysis shall be included with the ECP. (See MIL-STD-882)

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- h. Value engineering (VE). Code V shall be assigned to an engineering change that will effect a net life cycle cost reduction and which is submitted pursuant to the VE clause of the contract.
11. Priority. A priority shall be assigned to each Class I ECP based upon the following definitions. Class II ECPs do not require a priority assignment. The proposed priority is assigned by the originator and will stand unless the Government has a valid reason for changing the priority.
- a. Emergency (E). Shall be assigned to an engineering change proposed for any of the following reasons:
    - (1) To effect a change in operational characteristics which, if not accomplished without delay, may seriously compromise national security;
    - (2) To correct a hazardous condition which may result in fatal or serious injury to personnel or in extensive damage or destruction of equipment. (A hazardous condition usually will require withdrawing the item from service temporarily, or suspension of the item operation, or discontinuance of further testing or development pending resolution of the condition.); or
    - (3) To correct a system halt (abnormal termination) in the production environment such that CSCI mission accomplishment is prohibited.
  - b. Urgent (U). Shall be assigned to an engineering change proposed for any of the following reasons:
    - (1) To effect a change which, if not accomplished expeditiously, may seriously compromise the mission effectiveness of deployed equipment, software, or forces; or
    - (2) To correct a potentially hazardous condition, the uncorrected existence of which could result in injury to personnel or damage to equipment. (A potentially hazardous condition compromises safety and embodies risk, but within reasonable limits, permits continued use of the affected item provided the operator has been informed of the hazard and appropriate precautions have been defined and distributed to the user.); or
    - (3) To meet significant contractual requirements (e.g., when lead time will necessitate slipping approved production or deployment schedules if the change was not incorporated); or
    - (4) To effect an interface change which, if delayed, would cause a schedule slippage or increase cost; or
    - (5) To effect a significant net life cycle cost savings to the Government, as defined in the contract, through value engineering or through other cost reduction efforts where expedited processing of the change will be a major factor in realizing lower costs.
    - (6) To correct unusable output critical to mission accomplishment;
    - (7) To correct critical CI files that are being degraded; or
    - (8) To effect a change in operational characteristics to implement a new or changed regulatory requirement with stringent completion date requirements issued by an authority higher than that of the functional proponent.
  - c. Routine (R). Shall be assigned to a proposed engineering change when emergency or urgent is not applicable.
12. ECP designation.
- a. Model/Type. Provide model or type designation of the CI for which this proposal is being submitted. For Computer Software Configuration Items (CSCI), enter the CSCI identification number.
  - b. CAGE code. Enter the CAGE code for the activity originating the ECP.
  - c. System designation. The system or top-level CI designation or nomenclature assigned shall be entered, if known.
13. ECP number. Provide an ECP number. Once an ECP number is assigned to the first submission of a change proposal, that number shall be retained for all subsequent submissions of a change proposal. One of the following methods of assigning ECP numbers may be used unless otherwise stated in the contract:
- a. ECP numbers shall run consecutively commencing with number 1, for each CAGE Code identified activity, or ECP numbers may be assigned in a separate series for each system that the contractor is producing
  - b. When an ECP is split into a basic ECP and related ECPs, the basic ECP shall be identified with the number prescribed above and each related ECP shall be identified by the basic number plus a separate dash number. The number of characters in the ECP number, dash number, type, and revision identification shall not exceed 32.

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- c. Other systems may be used provided the ECP number is unique for any CAGE Code identified activity, and the 32 character limitation is not exceeded.
14. **Type.** For Class I ECPs, indicate either a "P" for preliminary, or "F" for formal. A Class I ECP shall be preliminary if it meets the criteria below.
  - a. A preliminary change proposal is one that is submitted to the Government for review prior to the availability of the information necessary to support a formal ECP. It shall include a summary of the proposed change, its impact on related areas, and a justification. Examples are to furnish the Government with available information in order to permit:
    - (1) A preliminary evaluation relative to the merits of the proposed change (e.g. installation of a proposed change for the purpose of evaluation and testing prior to making a final decision to proceed with a proposed change); or,
    - (2) A determination regarding the desirability of continuing expenditures required to further develop the proposal.
    - (3) To provide alternative proposals; or
    - (4) To supplement a message relative to an emergency or urgent priority ECP when it is impracticable to submit a formal ECP within 30 calendar days; or
    - (5) To obtain Government approval to proceed with software engineering development prior to the development of the actual coding changes.
  - b. A formal ECP is the type, which provides the engineering information and other data in sufficient detail to support formal change approval/contractual implementation.
15. **Revision.** If an ECP is being revised, enter the proper identification of the revision, i.e., R1 for the first revision; R2, R3, etc. for subsequent revisions. (The date submitted (paragraph 5) shall be the date of the revised ECP.)
16. **Baseline affected.** Indicate the baseline(s) affected (see MIL-HDBK-61).
17. **Other systems/configuration items affected.** If other systems/configuration items are affected indicate whether the effect on other systems or CIs requires the submittal of related Class I ECPs. Supply details in paragraphs 33a and c.
18. **Specifications affected.** If specifications cited in the contract are affected by the ECP, their identity by the CAGE code of the design activity, document number, revision letter, and the NOR number of the NOR being submitted with the ECP, shall be provided.
19. **Drawings affected.** If drawings are affected by the ECP, their identity by the CAGE code of the design activity, document number, revision letter, and the NOR number of the NOR being submitted with the ECP, shall be provided.
20. **Title of change.** Provide a brief title to identify the component or system affected by the ECP. For example: F-18 Aircraft Air Turbine Start Connector Backshell Replacement; AN/AYK-14(v) CP-1502/CP-1503 Reconfiguration to CP-1799; (CSCI name) Block Update.
21. **Contract number(s) and line item(s).** Provide the number(s) of all currently active contract(s), and the affected contract line item number(s), at the originating CAGE-coded activity that are affected by the engineering change.
22. **Procuring contracting officer.** Provide the procuring contracting officer's name, office symbol/code, and telephone number applicable to the CI shown in paragraph 21.
23. **Configuration item nomenclature.** Provide the assigned name and type designation the CSCI name and number, if applicable, or authorized name and number of the CI(s) affected by the ECP.
24. **Is the CI in production?** If "yes", provide information as to whether deliveries have been completed on the contract(s). This data is not always applicable to software. If not applicable, so indicate.
25. **All lower level items affected.**

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- a. For hardware, an appropriate, complete descriptive name of the part(s) shall be provided as well as the quantity of the part(s). Additionally, applicable NSNs shall be provided.
  - b. For CSCI's, provide the name and identifier of each lower level CI and computer software unit affected.
26. Description of change. The description of the proposed change shall include the purpose and shall be given in sufficient detail to adequately describe what is to be accomplished. It shall be phrased in definitive language such that, if it is repeated in the contractual document authorizing the change, it will provide the authorization desired. Supporting data may be provided to the extent necessary to clearly portray the proposed change. If the proposed change is an interim solution, it shall be so stated.
27. Need for change. Provide an explanation of the need for the change to include specifically identifying the benefit of the change to the Government. The nature of the defect, failure, incident, malfunction, etc. substantiating the need for the change shall be described in detail. Full utilization shall be made of available failure data. If a new capability is to be provided, improvements in range, speed, performance, endurance, striking power, defensive or offensive capabilities, etc. shall be described in quantitative terms. Correspondence establishing requirements for the change and any testing accomplished prior to the submission shall be identified and summarized. If the ECP is needed to correct maintenance/logistics problems, that fact will be included with sufficient detail to identify the issues. If the ECP is being submitted as a response to a request for ECP or Government direction, cite that authority herein.
28. Production effectivity by serial number.
- a. For hardware, provide the estimated production effectivity point for the production items including serial number, or other item identification (e.g., block or lot number) as approved by the Government. In determining the effectivity point for the proposed change, consider, in addition to the time factors, the availability of all support elements affected and the most economical point of introduction consistent with all the salient factors involved. The earliest production incorporation is not necessarily the singular or most important factor in the establishment of a proposed change effectivity point. The effectivity point shall be based on concurrent availability of all logistics support elements and materials affected by the change to the item.
  - b. For CSCI's, identify the CSCI version number, if known, into which the change will be incorporated. Where applicable, the effectivity of the end item CI and vehicle (aircraft, tank, ship, etc.) into which the capability represented by the new version of the software is proposed to be incorporated, shall also be provided. If the impact of the ECP merits the release of a new software version include a recommendation to this effect. Serial numbers may be used in lieu of version numbers if approved by the Government.
29. Effect on production delivery schedule. State the estimated delivery schedule of items incorporating the change, either in terms of days after contractual approval, or by specific dates contingent upon contractual approval by a specified date. If there will be no effect on the delivery schedule, so state.
30. Retrofit.
- a. Recommended item effectivity. When the contractor recommends that the engineering change be accomplished in accepted items by retrofit, the quantities and serial (or lot) numbers of accepted items in which the change is proposed to be incorporated by retrofit shall be provided. Such statement regarding items currently in production shall be based upon the estimated approval date of the ECP.
  - b. Ship/vehicle class affected. When the delivered CI is installed in one or more ship/vehicle classes, enter the identification of such classes.
  - c. Estimated kit delivery schedule. State estimated kit delivery schedule by quantity and date. When special tooling for retrofit is required for Government use, provide the dates of availability of tools, jigs, and test equipment required in conjunction with the kits to accomplish the change.

## DATA DELIVERY DESCRIPTION - ENGINEERING CHANGE PROPOSAL (ECP)

- d. Locations or ship/vehicle numbers affected. State the location(s) where retrofit is to be accomplished. If retrofit is to be accomplished in ships (or in vehicles for which the serial numbers are not shown in paragraph 30b), enter the ship hull numbers or vehicle numbers.

NOTE: The appropriate information shall be provided for CSCI changes that are to be incorporated as part of a hardware or equipment change; and implemented per a hardware retrofit schedule, or where the fielded version of the software is to be replaced.

31. Estimated costs/savings under contract. Provide the total estimated costs/savings impact of the ECP on the contract for the subject CI. Savings shall be shown in parentheses.
32. Estimated net total costs/savings. Provide the total estimated costs/savings impact of the basic and all related ECPs, including other costs/savings to the Government. Savings shall be shown in parentheses.
33. Effects on Functional/Allocated Configuration Identification. This information is to be provided only if the proposed change affects the system specification or the item development specification(s). If a separate product function specification is used, effects on such specification of changes proposed after the Product Baseline has been established shall be described as required.
  - a. Other systems affected. Provide only if other systems/configuration items are affected as indicated in paragraph 17.
  - b. Other contractors/activities affected. Identify other contractors or Government activities that will be affected by this engineering change.
  - c. Configuration items affected. Enter the names and numbers of all CIs, maintenance and operator training equipment, and support equipment affected.
  - d. Effects on performance allocations and interfaces in system specification. Describe the changes in performance allocations and in the functional/physical interfaces defined in the system specification.
  - e. Effects on employment, integrated logistic support, training, operational effectiveness, or software.
    - (1) For hardware, describe the effects of the proposed change on employment, deployment, logistics, and/or personnel and training requirements which have been specified in the approved system and/or CI specifications, including any changes or effects on the operability of the system. In particular, there shall be an entry detailing any effect on interoperability.
    - (2) For CSCIs, the following information shall be entered as applicable to the degree of design development of the CSCI at the time of ECP submission:
      - (a) Identify any required changes to the data base parameters or values, or to data base management procedures;
      - (b) Identify and explain any anticipated effects of the proposed change on acceptable computer operating time and cycle-time utilization;
      - (c) Provide an estimate of the net effect on computer software storage; and,
      - (d) Identify and explain any other relevant impact of the proposed change on utilization of the system.
34. Effects on configuration item specifications. The effect of the proposed change on performance shall be described in quantitative terms as it relates to the parameters contained in the CI development specifications. (See MIL-STD-961)
35. Developmental requirements and status.
  - a. For hardware, when the proposed engineering change requires a major revision of the development program (e.g., new prototypes, additional design review activity, tests to be reaccomplished), the nature of the new development program shall be described in detail, including the status of programs already begun.
  - b. For CSCIs, identify the scheduled sequence of computer software design and test activities which will be required. ECPs initiated after preliminary design which affect the FBL and/or the ABL shall identify, as appropriate, significant requirements for computer software redesign, recoding, repetition of testing, changes to the software

## DATA DELIVERY DESCRIPTION - ENGINEERING CHANGE PROPOSAL (ECP)

engineering/test environments, special installation, adaptation, checkout, and live environment testing. In addition, the specific impact of these factors on approved schedules shall be identified. The impact of the software change on the hardware design and input/output cabling shall also be detailed.

36. Date by which contractual authority is needed. Provide the date contractual authority is required in order to maintain the established schedule for:
- a. Production
  - b. Retrofit
37. Effects on product configuration documentation, logistics and operations. Certain information required may have been supplied in paragraphs above or does not apply to computer software. When this information has already been supplied, a cross-reference to such information will be adequate.
- a. For hardware, if any specific logistic interoperability factors are affected, provide information detailing the possible impact on the operational configuration.
  - b. For CSCIs, the software engineering and test environments are usually not affected by changes in the product configuration of a CSCI. Provide information about the status of the software redesign and retesting effort. There shall also be a review of the intent to document CSCI impacts in these areas.
38. Effect on product configuration documentation or contract. The effects on the approved CI product specifications shall be described by reference to the NORs or other enclosure(s) which cover such proposed text changes in detail. The effects on drawings, when not covered previously shall be described in general terms. Address nomenclature change when applicable. The effects on performance, weight-balance-stability, weight-moment, shall also be provided when applicable.
39. Effect on acquisition logistics support (ALS) elements. The effects of the engineering change on logistic support of the item shall be provided. These effects shall be explained in detail. The information required shall indicate the method to be used to determine the integrated logistic support plans and items which will be required for the support of the new configuration as well as retrofitting previously delivered items to the same configuration. The following shall be covered as applicable:
- a. Effects on schedule and content of the ALS plan.
  - b. Effect on maintenance concept and plans for the levels of maintenance and procedures.
  - c. System and/or CI logistics support analysis (LSA) tasks to be accomplished and LSA data requiring update wherever it exists in the contract. (MIL-PRF-49506)
  - d. Extension/revision of the interim support plan.
  - e. Spares and repair parts that are changed, modified, obsoleted or added, including detailed supply data for interim support spares. NOTE: Failure to include detailed supply data will delay ECP processing.
  - f. Revised or new technical manuals.
  - g. Revised or new facilities requirements and site activation plan.
  - h. New, revised, obsoleted or additional support equipment (SE), test procedures and software. For items of SE and trainers which require change, furnish a cross reference to the related ECPs, and for any related ECP not furnished with the basic ECP, furnish a brief description of the proposed change(s) in SE and trainers.
  - i. Qualitative and quantitative personnel requirements data which identify additions or deletions to operator or maintenance manpower in terms of personnel skill levels, knowledge and numbers required to support the CI as modified by the change.
  - j. New operator and maintenance training requirements in terms of training equipment, trainers and training software for operator and maintenance courses. This information should include identification of specific courses, equipment, technical manuals, personnel, etc. required to set up the course at either the contractor or Government facility.
  - k. Any effect on contract maintenance that increases the scope or dollar limitation established in the contract.
  - l. Effects on packaging, handling, storage, and transportability resulting from changes in materials, dimensions, fragility, inherent environmental or operating conditions.

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40. Effect on operational employment. The effects of the engineering change of CI utilization shall be provided. Quantitative values shall be used whenever practicable and are required when reliability and service life are impacted. Survivability includes nuclear survivability. The effects of the change proposal on safety, maintainability, operating procedures, electromagnetic interference, activation schedule critical single point failure items, and interoperability shall also be provided, if applicable.
41. Other considerations. The effects of the proposed engineering change on the following shall be identified:
- Interfaces having an effect on adjacent or related items, (output, input, size, mating connections, etc.).
  - GFE or Government Furnished Data (GFD) changed, modified or obsoleted.
  - Physical constraints. Removal or repositioning of items, structural rework, increase or decrease in overall dimensions.
  - Software (other than operational, maintenance, and training software) requiring a change to existing code and/or, resources or addition of new software.
  - Rework required on other equipment not included previously which will effect the existing operational configuration.
  - Additional or modified system test procedures required.
  - Any new or additional changes having an effect on existing warranties or guarantees.
  - Changes or updates to the parts control program.
  - Effects on life cycle cost projections for the configuration item or program, including projections of operation and support costs/savings for the item(s) affected over the contractually defined life and projections of the costs/savings to be realized in planned future production and spares buys of the item(s) affected.
42. Alternate solutions. When applicable, provide a summary of the various alternative solutions considered, including the use of revised operation or maintenance procedures, revised inspection or servicing requirements, or revised part replacement schedules. The contractor shall provide an analysis of the alternatives, identify the advantages and disadvantages inherent in each feasible alternative approach, and show the reasons for adopting the alternative solution proposed by the ECP. When contractor's analysis addresses new concepts or new technology, supporting data shall be presented with the proposal to authenticate the trade-off analysis.
43. Developmental status. When applicable, make recommendations as to the additional tests, trials, installations, prototypes, fit checks, etc., which will be required to substantiate the proposed engineering change. These recommendations shall include the test objective and test vehicle(s) to be used. Indicate the development status of the major items of GFE which will be used in conjunction with the change and the availability of the equipment in terms of the estimated production incorporation point.
44. Recommendations for retrofit. When applicable, make recommendations for retrofit of the engineering change into accepted items with substantiating data, any implications thereto, and a brief description of the action required. Where retrofit is not recommended, an explanation of this determination shall be provided.
- Work-hours per unit to install retrofit kits. Show the amount of work which must be programmed for various activities to install retrofit kits. Estimate work-hours to install retrofit kits when weapon system is undergoing overhaul.
  - Work-hours to conduct system tests after retrofit. Provide the work-hours required to test the system or the item following installation of the retrofit kit.
  - This change must be accomplished. Where previously approved engineering changes must be incorporated in a specific order in relation to the proposed change, such order should be specified.
  - Is contractor field service engineering required? If "yes" attach proposed program for contractor participation.
  - Out of service time. Estimate the total time period from removal of the equipment from operational service until equipment will be returned to operational status after being retrofitted.
45. Effect of this ECP and previously approved ECPs on item. Summarize the cumulative effect upon performance, weight, electrical load, etc., of this ECP and previously approved ECPs when design limitations are being approached or exceeded. Provide consequences of ECP disapproval.

## DATA DELIVERY DESCRIPTION - ENGINEERING CHANGE PROPOSAL (ECP)

46. Production impact costs. Estimated costs/savings applicable to production of the item resulting from the change. Includes the costs of Redesign of the CIs or Components thereof, of Factory Test Equipment, of Special Factory Tooling, of Scrap, of Engineering Design, of Engineering Data Revision, of Revision of Test Procedures, and of Testing and Verification of Performance of New Items.
47. Retrofit impact costs: Estimated costs applicable to retrofit of the item including installation and testing costs. Includes Retrofit-specific Engineering Data Revision, Prototype Testing, Kit Proof Testing, Purchase of Retrofit Kits for Operational Systems, Preparation of Modification Instructions, Design and Manufacture of Special Tooling for Retrofit, Installation of Kits by contractor personnel, Installation of Kits by government personnel, Testing after Retrofit and Modification, and Testing and Verification of Performance of Government Furnished Equipment/Property (GFE/GFP).
48. Logistics support impact costs: Estimated costs/savings of the various elements of logistics support applicable to the item. Includes Spares/Repair Parts Rework, New Spares and Repair Parts, Supply/Provisioning Data, Support Equipment, Retrofit Kit for Spares, Operator Training Courses, Maintenance Training Courses, Revision of Technical Manuals, New Technical Manuals, Training/Trainers, Interim Support, Maintenance Manpower, and Computer Programs/Documentation.
49. Other costs/savings: Includes estimated costs of interface changes accomplished by other contractor activities. (Do not include costs if the changes are covered by related ECPs by other contractors. Also includes estimated costs of interface changes accomplished by the Government for changes which must be accomplished in previously delivered items (aircraft, ships, facilities, etc.), other interfacing products, and/or retrofit of GFE/GFP, to the extent that such costs are not covered under production, retrofit, or logistics support.
50. Estimated costs/savings summary, related ECPs. Provide a summary of the estimated net total cost impact of both the ECP and any related ECPs and other associated new requirements which are needed to support the modified items broken out by categories described in paragraphs 47 through 50 above.
  - a. Prime contractor. The prime contractor shall summarize the costs/savings of all related ECPs for which the contractor is responsible. If there is no system integrating contractor, the prime contractor submitting the basic ECP shall include the costs of related ECPs being submitted by other affected contractors to the extent such information is available.
  - b. System integrating contractor. When a system integrating contractor (or coordinating contractor) has contractual responsibility for ECP coordination, the contractor shall summarize the costs of related ECPs of the several primes involved in an interface or interrelated ECP.
51. Milestones. Provide milestones that show the time phasing of the various deliveries of items, support equipment, training equipment, and documentation incorporating the basic and related ECPs. Enter symbols and notations to show the initiation or termination of significant actions. Base all dates upon months after contractual approval of the basic ECP.
52. Signature. An authorized official representing the contractor submitting the ECP shall sign the ECP.

**ENCLOSURE A007**  
**ENGINEERING RELEASE RECORD (ERR)**

**1. GENERAL.**

- 1.1 Scope. This appendix establishes uniform requirements for the preparation of the Engineering Release Record (ERR). The information contained herein is intended for compliance.
- 1.2 Application. The provisions of this appendix apply whenever an ERR is utilized to record release of configuration baseline documentation.

**2. GENERAL REQUIREMENTS.**

- 2.1 Use of DD Form 2617 and 2617C. The Contractor shall use DD Form 2617 and DD Form 2617C when additional space is required, or an authorized equivalent automated record containing the same information as the paper document description. Local reproduction of DD Forms 2617 and 2617C is authorized.
- 2.2 Engineering Release Record (ERR). The Contractor shall use an ERR to record the release of configuration documentation that establishes the allocated and product baselines or to record changes from an established configuration baseline.

**3. DETAILED REQUIREMENTS. Detailed instruction for completion of the ERR.**

- 3.1 Block 1. ERR No. Enter the unique ERR identification number or the number assigned by the Government.
- 3.2 Block 2. Date. Entry will not be made in Date Block 2 until completion of Approval Block 13 by an authorized official.
- 3.3 Block 3. Procuring Activity Number. N/A
- 3.4 Block 4. DODACC. Enter the DODACC of the procuring agency.
- 3.5 Block 5. Baseline Established or Changed. Check appropriate block to identify the configuration baseline established or changed.
- 3.6 Block 6. Type of Release. Check appropriate block to indicate whether release is establishing a baseline (initial) or a change to the established configuration baseline.
- 3.7 Block 7. Enter the ECP number and the date approved on the lines provided, when applicable.
- 3.8 Block 8. Functional Assembly Nomenclature. Enter part number and functional assembly nomenclature of the functional assembly to which the entire ERR applies.

3.9 Block 9. System or Configuration Item Nomenclature and Part Number. N/A

3.10 Block 10. Remarks or Miscellaneous. N/A

3.11 Block 11. Data Released or Revised. Enter each document and sheet as a separate line entry. EXCEPTION: Multi-sheet documents will be entered as a single line entry when all sheets are maintained at the same revision levels.

3.11.1 Block 11a. CAGE Code. Enter the CAGE Code of the document listed in Block 11c conforming to Cataloging Handbook H4/H8.

3.11.2 Block 11b. Type. Enter document type code (commonly used acronym as shown in the following examples):

CODE DOCUMENT TITLE (See File Title "DOCUMENT TYPE CODES")

DP	Product Drawings
DX	Source Control Drawing
DZ	Spec Control-Vendor Item Drawing
SQ	Quality Assurance Provisions
EL	List of Inspection Equipment
PL	Parts List (MIL-STD-100)
PS	Special Packaging Instructions
ED	List of Equipment – Depot Installed
EM	List of Equipment – Manufacturer Installed
ET	List of Equipment – Troop Installed
B-5	Development Specification
C-5	Product Specification
FSM	Firmware Support Manual
IDS	Interface Design Specification (DOD-STD-1679)
IRS	Interface Requirements Specification
PDS	Program Design Specification
PRF	Program Unique Performance Specifications
PPS	Program Performance Specifications
SPS	Software Product Specification
SRS	Software Requirements Specification
SS	System Specification
VDD	Version Description Document

3.11.3 Block 11c. Number. Enter documents in a logical order by types of documents in ascending numerical and alpha-numerical sequence.

3.11.4 Block 11d. Page of. Enter the particular page number of the total count of pages in Column 11e. No entry required for single page documents. If whole document is released, enter "All."

- 3.11.5 Block 11e. Pages. The total count of pages comprising the document. No entry required for single page documents.
- 3.11.6 Block 11f. Letter. Enter the new revision symbol to be issued for the document listed in Column 11e. For original documentation, enter a hyphen (-).
- 3.11.7 Block 11g. Date. Enter the document date in six numeric characters, year, month, day, each separated by a hyphen (-), e.g., "91-02-06".
- 3.11.8 Block 11h. Release.
- (1) Initial Release (IR). Enter "X" if the document is being initially released.
  - (2) New Application Release (NAR). Enter "X" if the document has a new application
- 3.11.9 Block 11i. Change.
- (1) Change (CH). Enter "X" for each document listed for which the revision level of an established baseline document is being changed.
  - (2) Cancellation (CAN). Enter "X" for each listed document which is to be deleted from an established configuration baseline.
- 3.11.10 Block 11i. Other. For optional use. Partition this block to enter additional source data required by the SOW paragraph for ERR.
- 3.12 Block 12. Submitted by. Enter type, printed, or stamped name and signature of responsible drafting or engineering services contractor organization or engineering segment.
- 3.13 Block 13. Approved by. To be completed by the authorized Government official.
- 3.14 Detailed Instructions for Completion of the continuation sheet.
- 3.14.1 Block 1. ERR No. Enter the same number as entered in Block 1 of Page 1 of the ERR.
- 3.14.2 Block 2. Date. Entry will not be made in date Block 2 until completion of Page 1, Approval Block 13, is accomplished by an authorized official.
- 3.14.3 Blocks 3a through 3j. Follow instructions contained in paragraph 3.11.1 through 3.11.10.

## Enclosure A013

### SAMPLE PPL FOR FORMAT

H7UTTAXHZA	BU1604MBCS10800	3	3MEDEVAC ICD	0	01A
H7UTTAXHZA	U1604MBCS10800	D			02A
H7UTTAXHZA		EA00000000100EA00000000100	PAOOO A09 U		01B
H7UTTAXHZA	AAAD N 000200002				01C
H7UTTAXHZA	AAAF N				02C
H7UTTAXHZA	Q60, H6L,				01D
H7UTTAXHZA	90 10				01E
H7UTTAXHZA	017QF MB SEAT				01H
H7UTTAXHZA	3QMC-27000047 2502700000A				01J
H7UTTAXHZA	3QMC-1001A471 2500100001B				02J
H7UTTAXHZA	3QMC-270000SEE FIG. C-1 FOR NHA				01K
H7UTTAXHZA	3QMC-1001ASEE FIG.C-27 FOR BREAKDOWN		UOC:H6L		02K
H7UTTAXJAA	CU1604MBCS10801	3	3GA SEAT ROTATING	0	01A
H7UTTAXJAA	U1604MBCS10801	D			02A
H7UTTAXJAA		EA00000000100EA00000000100	XDOOO A09 U		01B
H7UTTAXJAA	XHZA N 000100001				01C
H7UTTAXJAA	Q60, H6L,				01D
H7UTTAXJAA	017QFA MB SEAT				01H
H7UTTAXJAA	3QMC-270038471 2502700038A				01J
H7UTTAXJAA	3QMC-28000047 2502800000A				02J
H7UTTAXJAA	3QMC-270038SEE FIG.C-28 FOR BREAKDOWN				01K
H7UTTAXJAA	3QMC-280000SEE FIG.C-27 FOR NHA				02K
H7UTTAXJAD	D05457AGS2050-530BH	3	3RIVET, BLIND	0	01A
H7UTTAXJAD	05457AGS2050	D			02A
H7UTTAXJAD		EA00000000095EA00000000095	XDOZZ A05 U		01B
H7UTTAXJAD	XJAA N 000400046				01C
H7UTTAXJAD	Q60, H6L,				01D
H7UTTAXJAD	017QFAAA MB SEAT				01H
H7UTTAXJAD	3QMC-280080471 2502800080A				01J
H7UTTAXJAE	DU1604MBCS10812	3	3PLUNGER, FORE, AFT	0	01A
H7UTTAXJAE	U1604MBCS10812	D			02A
H7UTTAXJAE		EA00000003807EA00000003807	XDOZZ A06 U		01B
H7UTTAXJAE	XJAA N 000200002				01C
H7UTTAXJAE	Q60, H6L,				01D
H7UTTAXJAE	017QFABB MB SEAT				01H
H7UTTAXJAE	3QMC-280057471 2502800057A				01J

TDP OPTION SELECTION WORKSHEET SPECIFICATIONS					
A. CONTRACT NO.  <b>UH-60/IAFTS</b>	B. EXHIBIT/ATTACHMENT NO.  <b>ENCLOSURE A002</b>	C. CLIN	D. CDRL DATA ITEM NO.  <b>DI-CMAN-81314 (ICS) DI-CMAN-80643 (SCN)</b>		
1. ITEM, PROCESS OR MATERIAL  <b>H-60 Program Unique &amp; Interface Specifications</b>					
2. COMMERCIAL ITEM DESCRIPTIONS					
X 3. DEFENSE SPECIFICATIONS. (X one and complete as applicable)					
a. MIL-PRF		b. MIL-DTL		X c. PROGRAM UNIQUE	
(1) Coordinated		(1) Coordinated		(1) PERFORMANCE (2) DETAIL	
(2) Limited Coordinated		(2) Limited Coordinated		X a. System Segment Interface Control Spec. a. System	
(3) Interim		(3) Interim		b. Item b. Item	
				c. Software c. Software	
				d. Material d. Material For Flight Safety Parts Only	
				e. Process e. Process For Flight Safety Parts Only	
4. ASSOCIATED DOCUMENTS PER MIL-STD-961. The Following documents associated with defense specifications are required under the CDRL data item number referenced herein. (X and complete as applicable)					
a. DOCUMENT		b. CDRL DATA ITEM NO.		a. DOCUMENT b. CDRL DATA ITEM NO.	
(1) Supplements				(5) Cancellation Notice	
X (2) Amendments		CDRL C001 (SCN)		(6) Reinstatement Notice	
(3) Validation Notice				(7) Military Specification Sheets	
(4) Inactive for New Design Notice					
5. DELIVERABLE PRODUCT (X and complete as applicable)					
a. ORIGINALS					
(1) Camera Ready Master					
X (2) Digital Data (Detail in item 6) including requirement for diskettes with Portable Document Format or Printer Description Language, and Word Processing Program.					
6. OTHER TAILORING (Attach additional sheets as necessary)					
1.) Interface Control Specification shall be assigned CAGE Code 81996 with AMCOM specification number AVNS-ICS-10189.					
2. Contractor shall submit as 8.5"x 11" PDF IAW MIS-STD-52406-IS, using Weapon System Code "BE" for data element # 56.					

## ENCLOSURE A009

### SUMMARY TITLE: Maintenance Allocation Chart (MAC)

#### SPECIFIC INSTRUCTIONS:

1. The MAC shall include all maintenance significant components, assemblies, subassemblies, and modules. The MAC shall identify the maintenance functions that must be performed, the level responsible for the function, and the active repair time, tools, and test equipment necessary to perform the function for each repairable assembly and subassembly of the end item. The MAC report is the maintenance plan used to validate the system maintenance concept and facilitates the assignment of the provisioning Source, Maintenance, and Recoverability (SMR) codes.

1.1 The MAC shall include all maintenance levels of up to and including depot and shall be documented as an Appendix to the system's lowest level maintenance manual. The MAC report shall incorporate a three level maintenance structure as defined by the Government. The Level of Repair Analysis (LORA) results and Ground Support Equipment Selection Data (GSESD) information, if available, shall be used as source data in the preparation of the MAC. The MAC shall document to the lowest repairable assembly within the end item. Non-repairable items are to be documented in a remark against the repair function of the next higher assembly (NHA). All items that have repair functions assigned to multiple levels shall be supported by remarks that clarify the specific repair actions performed at each level (e.g., repair at organizational level is limited to the replacement of defective fuses and lamps). The MAC shall be structured in such a way that replacement of an item is considered the repair of its NHA.

1.2 Configured systems may be comprised of nomenclature components and/or end items that are covered by a separate MAC, RPSTL and Maintenance Narrative. The system MAC will list these components and/or end items with Functional Group Code and maintenance functions performed at organizational level with a remark against the repair function. This remark shall reference the appropriate equipment publications that contain the component's MAC.

1.3 When an item appears in a system in multiple quantities with the same maintenance concept, the Government will allow reference to the first appearance. If the items are sequential in appearance, the items shall be grouped together under one Functional Group Code.

1.4 The MAC shall consist of the following four sections:

**SECTION I - INTRODUCTION.** The Government shall furnish this section to the contractor.

**SECTION II - MAINTENANCE ALLOCATION CHART.** The Functional Group Codes (column 1) shall be alphanumeric codes that identify a particular system, subsystem, component/assembly or part of the system. Functional Group Code assignment shall correspond to the topdown breakdown sequence of the system/end item. The maintenance functions shall adhere to one of the following tasks: test, inspect, replace, repair, fault locate, service, overhaul, adjust, align. The format of Section II shall be consistent with the ATTACHED example.

**SECTION III - TOOLS AND TEST EQUIPMENT REQUIREMENTS.** In contractor format, this section shall identify the comprehensive listing of all tools and test equipment required to perform the maintenance function of Action II. A numeric reference code shall be assigned to each entry so that it may be referenced in column 5 of Section II against the corresponding maintenance function. At a minimum, each tool and test equipment entry (i.e., reference code) shall identify the maintenance level(s) where its used, common name, nomenclature or model/part number and National Stock Number (if applicable).

**SECTION IV - REMARKS.** In contractor format, this section shall contain remarks that are critical in clarifying Section II of the MAC. All maintenance functions that are limited must be clarified by a remark. All throwaway items for which discard has been economically justified should be cited as a remark in the repair of the NHA. An alpha-character reference code shall be assigned to each remark so that it may be referenced in column 6 of Section II against the corresponding maintenance function.

DATA IN LMI SPECIFICATION	N/A
DATA NOT IN LMI SPECIFICATION	N/A
SUMMARY LAYOUT	N/A

**STATEMENT OF WORK  
FOR  
VIP II 12-POINT INTERNAL COMMUNICATION SYSTEM (ICS)  
KIT PRODUCTION**

**1.0**           **SCOPE:** This Statement of Work (SOW) defines the effort required to reverse engineer and prepare an updated drawing package for the VIP II 12-Point ICS. The Contractor shall also fabricate/purchase VIP II 12-Point ICS kits for UH-60A/L aircraft.

**2.0**           **REQUIREMENTS:**

**2.1**           **GOVERNMENT FURNISHED INFORMATION (GFI):** The Government will provide the drawing package for the VIP II 12-Point ICS kit.

**2.2**           **GOVERNMENT FURNISHED PROPERTY (GFP):** The Government will provide one VIP II 12-Point ICS kit.

**2.3**           **REVERSE ENGINEERING:** The Contractor shall reverse engineer the GFP VIP II 12-Point ICS kit and prepare new and updated drawings for the kit. The Contractor shall prepare the new and updated product drawings and associated lists IAW DI-SESS-81000 and deliver IAW CDRL A####. For drawing types and definitions, the Contractor shall refer to ASME Y14.24M. The Contractor shall verify form, fit and function of components manufactured from the new drawings on initial installation. The Contractor shall verify by installation of the kit that all new or revised drawings are properly dimensioned and represent each of the components manufactured from them.

**2.4**           **KIT PURCHASE/FABRICATION:** The Contractor shall provide 100 each VIP II 12-Point ICS kits in accordance with the drawing package provided as GFI.

**2.5**           **INSPECTION AND ACCEPTANCE:** The Government, using a Government Technical Inspector, will inspect and accept all work using DD Form 250.

**2.6**           **QUALITY ASSURANCE:** The Contractor shall implement a quality system that satisfies the program objectives IAW ANSI/ASQ-Q9001.

**2.7**           **PERIOD OF PERFORMANCE:** The Period of Performance for this contract shall end 12 months after contract award.